BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Founded by HENRY E. SIGERIST

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THE FACULTY OF MEDICINE AT PARIS, CHARLATANISM, AND UNLICENSED MEDICAL PRACTICES IN THE LATER MIDDLE AGES

PEARL KIBRE

The rôle of the medical faculty of the university of Paris [1] in matters affecting the health of residents of the city of Paris was an active and important one. Not only did the faculty respond to the requests for aid in the periodic outbreaks of pestilence and plague from 1348 onward,[2]

[1] Material for the present article, read in part before the New York Society for Medical History, and constituting part of a larger study now in progress on "The Rights, Privileges, and Immunities of Mediaeval Universities and University Scholars," was gathered during a year abroad under a Fellowship Grant from the John Simon Guggenheim Memorial Foundation for 1950-1951.

A list of the extended titles for those works frequently cited in abbreviated form in the notes will be found at the close of the article.

[2] In 1348 King Philip IV asked for aid from the university faculty of medicine: *Chart. univ. Paris.*, II, no. 1159, p. 623; A. M. Campbell, *The Black Death and Men of Learning*, New York, 1931, pp. 14-17; and cf. *ibid.*, p. 97. In the fifteenth century so many masters, because of the great multitude of the sick, were occupied with practice that they were unable to carry on their teaching: *Chart. univ. Paris.*, IV, pp. 351-352. See also *ibid.*, III, p. 107, no. 1284. In the year 1500 when the provost of the city of Paris asked the faculty's aid in combating the plague, the faculty requested in return the provost's assistance in combating illegal medical practice by charlatans and empirics: Wickersheimer, *Commentaires*, Paris, 1915, introduction, particularly, pp. lxxxviii-xci; also pp. 425 (1499-1500), and 448 (1500-1501).

but on its own initiative it undertook the less spectacular task of attempting to stamp out charlatanism and medical practice by empirics. It also endeavored, "in the public interest," to establish an effective surveillance over apothecaries, herbalists, and surgeons. To realize these aims, the faculty relied not only on the issuance of regulations and statutes but even more particularly upon the active prosecution, with the aid of the bishop's court, of those who engaged in illicit practices. The regulations and the records of the court proceedings in specific instances, in the fourteenth and fifteenth centuries, which have been utilized in the present study, reveal the steps taken to punish charlatans and empirics and the difficulties of enforcing the university regulations.[3]

The university's right to prosecute unlicensed persons who were practicing medicine was based, it asserted, upon a regulation issued at some earlier date by the bishop's court at Paris. The intent of this regulation which, in 1311 and 1322, was said to have been made some two hundred years before, was to prohibit from engaging in medical practice in Paris anyone who had not been examined and approved by the faculty. Both the authenticity and dating of such a statute appear doubtful since so far no text of such a pronouncement seems to have been found. There is also no apparent evidence that an organized faculty of medicine was functioning in Paris before 1200.[4] It is of course possible that the term "two hundred years" was a mere figure of speech to establish the hoary antiquity of the faculty's jurisdiction.

There were some precedents outside of Paris for the principles of examination and licensing of practicing physicians but no records of such regulations appear to be extant before the first quarter of the twelfth century. Such regulations would appear therefore to be a distinctly medieval phenomenon. No legal restrictions on practicing physicians prevailed in antiquity, despite the emphasis of the Hippocratic school of physicians upon adherence to a strict code of professional ethics. And although this code of ethics, preserved in the Hippocratic Oath, persisted into the middle

[3] The most interesting collection of materials for this purpose is that contained in the seventeenth century manuscript in the Paris Archives nationales: MM 226: "Extrait sommaire des divers procès de contestatione de la faculté de medecine depuis contra divers particulaires exercant illicitime la medicine. Pour l'utilité publique et d'histoire . . . ab anno 1311 ad annum 1395." Most of the materials in this collection have already been published in the *Chart. univ. Paris.*, which at II, xxi, reports on it.

[4] Medicine along with Civil Law was being taught at Paris between 1175 and 1190 and very probably earlier, but it is doubtful that the medical faculty was organized at that early period: *Chart. univ. Paris.*, I, pp. 55-56, no. 54.

ages,[5] there were no laws against medical practice by ignorant and untrained persons who might never have heard of the Hippocratic oath. Thus Pliny the Elder caustically remarked that there " is no law which punishes ignorance, no example of redress for this capital crime, that they (the physicians) learn by endangering our lives and carry on experiments by causing deaths, to such an extent that the greatest impunity is given to a physician for having killed a man." [6] Only in the fourth century of the Roman Empire do we encounter any legislation in this regard. But the laws made under Valentinian I and Valens providing for the examination of those preparing to practice medicine pertained only to the chief physicians, the *archiatri* or the physicians associated with the royal or imperial person. The Theodosian Code further added that after the prospective *archiatri* had submitted to an examination by a college or royal council of the chief physicians, they must have the emperor's consent before they could practice in the palace.[7] It was apparently to this royal council of chief physicians that Cassiodorus addressed his *Formula comitis archiatrorum,* in the early sixth century.[8]

But even such scanty legislation became a dead letter with the breakdown of Roman imperial authority in western Europe. From the sixth century onward, medical learning and skill, transmitted from antiquity together with the code of medical ethics embodied in the Hippocratic oath, were obliged with other classical learning to take refuge in monastic centers. There under ecclesiastical supervision medical study and practice were at first encouraged and cultivated probably for purely practical reasons and in accordance with the clear admonitions of the " Book of Ecclesiasticus " [9] that the physician and medicine are to be honored because they are created by God. Cassiodorus in his monastic retreat at Vivarium urged the monks to become acquainted with the medical works that he had collected for their use; [10] and Rabanus Maurus two centuries later, in both

[5] In this regard see especially L. C. MacKinney, " Medical Ethics and Etiquette in the Early Middle Ages: the persistence of Hippocratic Ideals," *Bulletin of the History of Medicine*, 1952, vol. 26, 1 *et seq.*, and the references there cited.

[6] Pliny, Nat. Hist., lib. XXIX, cap. 8 (*Bibl. classica latina*, 1829, vol. 79: viii, p. 198).

[7] See H. Conring, *De antiquit.*, pp. 57-59, 259-261, citing " Const. Valentiniani et Valentis "; and *The Theodosian Code and Novels and the Sirmondian Constitutions, a translation with Commentary, Glossary, and Bibliography*, by C. Pharr, Princeton University Press, 1952, p. 388.

[8] Variarum, liber VI, paragraph xix (Migne, vol. 69, cols. 700-701).

[9] Liber Ecclesiasticus, 38, 1-11 (*Biblia Sacra Vulgatae Editionis Sixti V Pont. Max.*, 1922, p. 655): " Honora medicum propter necessitatem: etenim illum creavit Altissimus . . . Altissimus creavit de terra medicamenta. et vir prudens non abhorrebit illa."

[10] De inst. divin. lett., cap. 31 (Migne, vol. 70, cols. 1146-47).

his encyclopedic "De universo" and in his "Commentary on the Book of Ecclesiasticus," urged that out of necessity medicine should be cultivated and honored rather than spurned.[11]

By the twelfth century, however, the increasing tendency of members of monastic orders to engage in medical practice to the neglect of their religious duties was cause for alarm and regulation by the ecclesiastical authorities. Prohibitions of such practice, at first directed only to monks who practiced medicine for gain, were later extended to any or all medical practice or study outside the monasteries by members of the orders.[12] In the thirteenth century Pope Honorius III renewed the prohibitions and extended them to all clerics regular or secular.[13] But by the middle of the fourteenth century such restrictions were being set aside by papal dispensations, and clerics, regular or secular, were given permission to study, to lecture, and to practice medicine at Paris or elsewhere in accordance with the university regulations.[14]

Direct regulation of those who wished to teach medicine and to practice among the populace first appeared in southern Italy where the school of Salerno was already a flourishing medical school in the eleventh century. Legislation relating to the examining and licensing of prospective physicians is extant, however, only from the twelfth century.[15] On the other

[11] De universo, liber XVIII, cap. 5 (Migne, vol. 111, col. 501): "Medicinae curatio spernanda non est quia et sanctos viros ea uti legimus . . . Eccl. Honora medicina propter necessitatem." Comm. in Ecclesiasticum, liber VIII, cap. 13, De medico honorando (Migne, vol. 109, col. 1030).

[12] This was done at the councils of Reims in 1131 and at the Lateran council in 1139: E. Lesne, *Histoire*, pp. 679, 688. For the prohibitions of 1163 and 1179 (1180), see *Chart. univ. Paris.*, I, pp. 3 (no. 1); 78, note.

[13] For the prohibitions of Pope Honorius III in 1213 and 1219, see *Chart. univ. Paris.*, I, pp. 77-78; 90-93; and for those of 1227-1268, see *ibid.*, I, pp. 478-479.

[14] On January 9, 1364, clerics were permitted to enter the faculty of medicine and to be given a license; and on November 1, 1380, pope Clement VII granted to Guibertus de Celceto, a canon of the church of S. Germain and master of medicine, the right to lecture on and to practice medicine at Paris. A similar dispensation was given to Guibertus de "Saliceto," physician of Charles V, on September 25, 1377, by Gregory XI: *Chart. univ. Paris.*, III, pp. 109-110; 292, no. 1452; 331, 339, no. 1501; Arch. Nat. MM 266, p. 166. See also *Chart. univ. Paris.*, IV, pp. 55, 138, 197, 209, 578, 604, for such dispensations in the fifteenth century; Wickersheimer, *Commentaires*, introduction, pp. xlv-xlvii.

[15] For Salerno and Naples, see H. Conring, *De antiquit.*, pp. 60-61, 104, 106-107; H. Rashdall, *The Universities of Europe in the Middle Ages* (new ed. by F. M. Powicke and A. B. Emden, 3 vols.), Oxford, 1936, I, 76 *et seq.*; 83-85; also F. R. Packard, *History of the School of Salernum*, New York, 1920, pp. 34-36. The English translation of the ordinances was published by E. F. Hartung, "Medical Regulations of Frederick the Second of Hohenstaufen," in *Medical Life*, 1934, vol. 41, pp. 587-601.

hand ecclesiastical supervision of those who wished to teach medicine in the university is revealed at Montpellier in 1220, when Cardinal Conrad, the papal legate, made a ruling in this regard. He stated that although the science of medicine had flourished for a long time at Montpellier, henceforth no one ought to be free to teach medicine publicly there unless he received the license to teach (licentia docendi) from the bishop of Maguelone after he had been examined and recognized as qualified.[16] Earlier, in January, 1181, Guilhem VII, lord of Montpellier, had declared that the teaching of medicine in the schools of Montpellier should be free from outside interference.[17]

Although many of the provisions enacted by the medical faculty at Paris, for the examination and licensing of prospective physicians, resembled the imperial legislation at Salerno and Naples, the action of the faculty of the northern university provides a distinct contrast to the other centers. For unlike either Salerno or Montpellier, the initiative for the active prosecution of those practicing without a license came not from the imperial, ecclesiastical, or royal authorities but from the university medical faculty itself. In 1271 and 1272, the faculty at Paris took occasion to define more clearly the requirements for obtaining the license which was conferred by the chancellor of the Cathedral of Notre Dame.[18] At the same time the faculty proceeded to legislate against persons who were practicing illegally without a license and without the approval of the faculty, or more explicitly against those who "by shameful and brazen usurpation," assumed the office of medical practitioner at Paris. The members of the faculty denounced those empirics, who, without the approval and counsel of the more learned members of the profession, were administering to all comers medicines which they had concocted out of their own heads. They were declared by their treatment of the sick, based only on the whims of chance and fortune, to be guilty of criminally handing over many to suffering and even to death. The faculty pointed out that by practicing without authorization such persons were imperilling the safety of their own souls and were daily incurring the penalty of the ban of excommunication which would be launched by the official of the bishop of

[16] *Cartulaire de l'université de Montpellier* (2 vols.), *Montpellier*, 1890, I, pp. 180-183.

[17] *Ibid.*, pp. 179-180. See also E. Nicaise, introduction to his edition of *La Grande Chirurgie de Guy de Chauliac*, Paris, 1890, pp. li *et seq.*

[18] *Chart. univ. Paris.*, I, p. 517, no. 453; English translation by L. Thorndike, *University Records*, pp. 81-82. For other documents on license requirements, see *Chart. univ. Paris.*, I, nos. 444, 451-456; II, nos. 921, 996; IV, no. 2659. See also Wickersheimer, *Commentaires*, introduction, pp. xi-xvii, xviii *et seq.*

Paris against them. By their practices these empirics were said to constitute a distinct threat to the welfare of the residents of Paris as well as a serious discredit to the good name and repute of the more learned members of the medical profession. The faculty went on further to assert that it had been urged to take action to correct the existing critical situation by clergy and laymen alike. To prevent the continuation or perpetuation of such errors, perils, and resulting scandals, the faculty drew up, therefore, the regulations which were, it insisted, in confirmation of a statute made long ago, a statute which was said to be supported by letters of the official of the bishop of Paris, by royal authority, and the oaths taken by the individual members of the faculty of medicine.[19]

The regulations of 1271 were directed particularly against "certain manual operators," who made or possessed various medicaments which they administered without knowing the relation which these medicines had to diseases. Under every penalty allowed by civil and canon law for noncompliance with the law it was provided that no surgeon, male or female, no apothecary nor herbalist, was to exceed or overstep the limits or bounds of his craft, either secretly or publicly. The surgeon was to engage only in manual practice, the apothecary and herbalist were only to mix drugs which were to be administered exclusively by masters in medicine or under their express license. No one of the aforementioned was to visit any sick person nor "to administer to him any alterative medicine or laxative or anything else" that pertained to a physician, nor was he to advise that it be administered except by a master in medicine. Surgeons, apothecaries, and herbalists, were to be bound by oath to obey these provisions. Furthermore, bachelors in medicine,[20] that is those who had been permitted to lecture but were not yet licensed as masters in the medical faculty, under penalty of having their promotions withheld, were strictly forbidden to visit patients or to administer to them any drugs unless they were accompanied by or were in the presence of a master of the medical faculty. Information regarding anyone acting contrary to this statute was to be revealed secretly and under oath to the dean or to some teaching master in the medical faculty. The one to whom such information was given was to be obliged to shield the informer.[21]

[19] *Chart. univ. Paris.*, I, p. 488-490, no. 434. The document is translated into English by L. Thorndike, *University Records*, pp. 83-85.

[20] For the use of the term "baccalarius," or "bachelarius," in medicine, see Wickersheimer, *Commentaires*, introduction, p. xviii and note.

[21] *Chart. univ. Paris.*, I, pp. 489-490; Thorndike, *op. cit.*, pp. 84-85; Wickersheimer, *op. cit.*, introduction, pp. lxxii *et seq.*

Thus armed with laws of its own making, the faculty through its dean undertook the more difficult task of securing their enforcement. In 1311, a charlatan or empiric against whom the dean of the faculty brought charges of illegal practice demanded to know by what right the faculty dared to trouble him in his medical practice. To this demand the faculty made the reply noted above that their authority dated back to a statute of the official of the bishop of Paris made two hundred years earlier. By this statute, it was asserted, the right to practice medicine in Paris was denied to anyone who was not a master or who had not been licensed in the faculty of medicine.[22] The case, in 1312, of Clarice de Rothomago, wife of a certain Peter Faverel, revealed the steps taken against unlicensed persons. In this case, which ran from January 17 to June 15, 1312, Clarice was accused of practicing medicine illegally in Paris and was arrested at the instance of the dean of the faculty of medicine. She was then put under ban of excommunication by the official of the bishop's court at Paris. From this penalty she appealed to the official of the bishop of Senlis, the so-called conservator of the apostolic privileges of the university.[23] Her appeal was, however, of no avail since the dean of the medical faculty was able to obtain from the bishop of Senlis a reaffirmation of the sentence of excommunication against Clarice and against her husband as well. They were both to be denounced in all the churches and anyone who associated with them was to be subject to the same penalty.[24]

The effectiveness of this ban of excommunication and oral denunciation, applied against Clarice and her husband, as a means of frightening off other unlicensed persons from medical practice, appears to have been slight. Numerous cases of illegal practice continued to come to the

[22] Pajon de Moncets, *De l'origine des appariteurs des universités et de leurs masses*, Paris, 1782, pp. 122-123. Wickersheimer, *op. cit.*, pp. lxxii-lxxiii, indicates that it was probably toward 1220 that the faculty of medicine obtained from the diocesan official a sentence reserving the right to practice medicine at Paris and in the faubourgs to those who had obtained the master's degree in medicine with the approval of the chancellor of the university.

[23] The conservator of apostolic privileges of the university had the general power of protecting the university in its enjoyment of the privileges granted to it, and to secure respect for these privileges by punishing those who infringed upon them by ecclesiastical censure: Rashdall, *The Universities of Europe in the Middle Ages*, 1936, I, 342-343; 417-419.

[24] Paris, Arch. Nat. MM 266, pp. 3-13; *Chart. univ. Paris.*, II, pp. 149-153, nos. 693, 693a-c. The husband of Clarice, Petrus Faverel, was excommunicated as "empeiricus" on June 13; *ibid.*, pp. 150-151. He had sent no witnesses and had failed to appear himself after the appeal. He was therefore judged contumacious and the costs of the case were adjudged against him. The sentence against Clarice was issued on June 14, 1312; *ibid.*, pp. 151-152.

attention of the faculty. One of the most interesting of these was the case of Jacqueline Félicie de Almania. Her involvement began with her citation on August 11, 1322, for illegal practice, before the official of the bishop of Paris by the proctor of the dean of the medical faculty. She was duly excommunicated and, like Clarice, appealed against this sentence.[25] In the course of her trial, the proceedings of which continued for several months, a great many witnesses were called to testify on each side. Among the witnesses for the prosecution, on the side of the faculty, was the military knight and surgeon, John of Padua, who had been, as early as 1301, surgeon to the king of France, Philip IV.[26] John asserted that the penalities of prohibition and excommunication had been in operation for more than sixty years against ignorant and illicit empirics practicing in Paris and its environs. These penalties had been applied with the full approval of the venerable official of the bishop's court at Paris as well as with that of the illustrious kings of France. Yet contrary to these well known facts the defendant in question had persisted in acting as a physician although she was totally ignorant of the art of medicine. She was not lettered, nor had she been approved as competent in those things which she presumed to treat.

Furthermore, John pointed out, as it was forbidden by law that a woman practice law or be a witness in a criminal case,[27] so it was of far greater moment that she be likewise barred from the practice of medicine. Such practice required her to prescribe for patients foods and drinks for internal consumption and to apply clysters when in truth she knew neither the causes of the diseases from which they were suffering nor understood the letter or art of medicine. How much more serious therefore, John argued, was the danger that she might thus kill a man by these potions and clysters than that she might lose a civil suit through ignorance of the law. For through lack of knowledge in the former she might commit murder, and such a death would be a mortal sin over which the church would have jurisdiction. Hence in John of Padua's opinion the admonition

[25] *Chart. univ. Paris.*, II, pp. 255-256, no. 811; Arch. Nat., MM 266, pp. 13, 22, 23. Of this case Wickersheimer, *Commentaires*, introduction, p. lxxv, states: "C'est dans les pièces du procès intenté en 1322 à Jacqueline Félicie que nous trouvons les détails les plus intéressants pour l'histoire du charlatanisme à Paris au moyen âge."

[26] For John of Padua, see *Chart. univ. Paris.*, II, p. 256, note 1; also *ibid.*, II, no. 812, note; and Wickersheimer, *Dictionnaire*, II, 459.

[27] For the prohibition against the admission of women to the corporation of barristers or lawyers, see Paul Fournier, *Les Officialités, au moyen âge. Etude sur l'organisation, la compétence et la procédure des tribunaux ecclésiastiques ordinaires en France, de 1180 à 1328*, Paris, 1880, pp. 32-33; and for the prohibition against their appearing in civil courts as accusers, *ibid.*, p. 238.

and decree of excommunication launched by the official of the episcopal court at Paris should be binding.[28]

Equally emphatic were the arguments put forth by the defending counsel. He pointed out that Jacqueline Félicie had treated and cured many sick persons; that she had brought them comfort when other physicians had failed to do so; and that she had visited and cared for her patients assiduously until they were cured. This was corroborated by several witnesses who were brought to give testimony in Jacqueline's behalf. To each of these witnesses in turn the court put the questions of how they had learned about Jacqueline; whether she had acted as if she were a qualified physician; whether she had attempted to extort money from them; and finally, whether they knew that she had not been approved in any *studium generale*,[29] at Paris or elsewhere, or if they had seen her at Montpellier. In each instance the replies were similar. They had learned of her through a friend; she had proceeded as did most physicians in examining a patient; she had consistently refused to take any money until the patient had been cured; and they had not inquired into the matter of her qualifications. Among the witnesses for the defense was John of St. Omer. He testified that he had been cured of an illness by Jacqueline who had visited him several times and had done more for him than had any of the other physicians who were called in during his illness. She had given him a drink of some kind of clear liquid, which she or some one else had first sampled. Matilda, the wife of John of St. Omer, also attested the cure and added further that Jacqueline had applied poultices to John's chest.[30] Another witness, John Faber, asserted that Jacqueline had cured him by administering certain potions, one of them green in color, the other clear and colorless, but of what they were made, he did not know.[31]

An even more telling witness was a woman named Yvo Tueleu, a servant at the bishop's court in Paris. She related that she had been ill of a fever for which she had been visited by several physicians, none of whom had been able to cure her. Then at her request Jacqueline had come to her bedside, had given her a glass of the very clear liquid which had acted as a purge, and had successfully cured her of the fever.[32] Various other

[28] *Chart. univ. Paris.*, II, p. 256, no. 812; Arch. Nat. MM 266, p. 14.

[29] The usual term for the place in which the university associations were established; for its use see especially, Rashdall, *The Medieval Universities*, 1936, I, pp. 6-8.

[30] *Chart. univ. Paris.*, II, pp. 257-262; 261-262; Arch. Nat. MM 266, pp. 17-21.

[31] *Chart. univ. Paris.*, II, p. 259.

[32] *Ibid.*, II, p. 262.

persons who had been treated by the defendant testified to her ability and skill. One of them, Dominus Odo de Cornessiaco, a friar of the Hotel Dieu at Paris, stated that he too in his illness had been visited by several prominent physicians including John de Turre,[83] and the physicians Martin, Herman, and others. But none of them had been able to cure him. Then Jacqueline had come and had brought him back to health. Her course of treatments had included steam baths, massages with oil, and applications of herbs including leaves of camomile, melilot, and others. He stated that she had worked incessantly until he was entirely cured. Another former and grateful patient, Johanna, the wife of a certain Dionysius, stated that she too had been ill of a fever for which she had been visited by several physicians, including a certain Friar de Cordelis, the masters Herman, Manfred, and several others. All of them had given her up for certain death. Then Jacqueline had come and saved her. And still a further former patient, Johanna de Monciaco, a storekeeper or haberdasher, testified that she had been ill of an affliction of the kidneys, and that she had been for eleven days at St. Sulpice where she too was visited by the physicians, Guilbert, Herman, Manfred, and Thomas, none of whom had been able to help her. Then Jacqueline had succeeded in doing so by administering a glass of the clear liquid mentioned earlier.[84]

Also pointed out, in Jacqueline's defense, was the fact that there were many persons, practicing daily in Paris, who had not been approved in any university either at Paris or elsewhere and these persons similarly were without licenses either from the chancellor, the bishop of Paris, or from the said dean and masters of the medical faculty.[85] The defense then went on to attack the legality of the university statute.[86] This law, it was claimed, which had been invoked by the medical faculty had no legal validity, since it had never been approved by those whom it affected.

[83] *Ibid.*, II, pp. 259-260. Jean de Turre is probably to be identified with the son of the physician of Montpellier, Jourdain de Turre, who is noted by Wickersheimer as dedicating two of his works to his son in 1318: Wickersheimer, *Dictionnaire*, II, 497, 513-514.

[84] *Chart. univ. Paris.*, II, pp. 260-262; Arch. Nat. MM 266, pp. 18-19. Of the physicians named, Martin, Herman (Lombardus), Manfred, and Thomas (of Saint Georges), were all masters in the faculty of medicine, between 1310 and 1332: *Chart. univ. Paris.*, II, pp. 141, 350; 262, note 15; p. 394, note; Wickersheimer, *Dictionnaire*, II, 535, 766.

The various uses of the herbs camomile, or "camomilla" and melilot or "mellilotum" are noted in *The Herbal of Rufinus*, edited by L. Thorndike, Chicago University Press, 1945, pp. 71-72, 185-186.

[85] *Chart. univ. Paris.*, II, pp. 257-262, no. 813; Arch. Nat. MM 266, pp. 17-21. For the list of several other empirics condemned along with Jacqueline, see below.

[86] *Chart. univ. Paris.*, II, pp. 263-265, no. 814; Arch. Nat. MM 266, pp. 23-26, November 2, 1322.

It was merely an admonition by mandate of the venerable official of the bishop of Paris, an admonition, however, which was directed against ignorant, foolish, and unskilled persons merely simulating the medical art, yet totally ignorant of its precepts. Surely, it was argued, Jacqueline, an expert in the art of medicine and one who was well instructed in the precepts of medicine, could not be said to belong to this group. Moreover, if the university claimed that it was acting according to the law made some two hundred years earlier, the defense would direct attention to an even earlier law that states, " what touches all ought to be aproved by all." [87] Yet in this statute by which the faculty claimed to be proceeding, it does not appear that there was a summons of the masters, doctors, bachelors, and scholars of each faculty of the university then living at Paris, nor was there a summons of the bishop, archdeacon, dukes, barons, citizens, and burghers of Paris, whom such a decree also concerns and interests. Certainly none of these are named in the statute. In sum therefore, the defense argued, since those for whom the statute presumably was made had not been called, it was not valid, in their absence, and consequently it could not be binding on Jacqueline or on any other person.[88]

As a final argument, the defense counsel declared, it was better and more fitting that a wise and sagacious woman, experienced in the art of medicine should visit another woman, to examine her and to inquire into the hidden secrets of her being, than that a man should do this. For a man is not permitted to do these things, that is to inquire into her innermost secrets and to touch the various parts of her body. Indeed a man ought ever to avoid and shun the secrets of women and fly from their intimate association as much as he can. Besides, the defense counsel continued, it was often true that a woman would rather die than reveal the secrets of her infirmity to a man out of a sense of modesty and even of shame. For this reason many women have died in their illnesses since they were unwilling to have a physician who might learn their innermost secrets. In the case of Jacqueline, the court was reminded, members of both sexes had confided in her and she had been able to cure those whom other doctors could not. In conclusion the defense counsel asserted, the decree or statute invoked by the faculty of medicine could not be binding since it had been shown to be contrary to the public good.[89]

[87] For the use of this famous maxim, from the Roman Civil Code of Justinian, in the thirteenth and fourteenth centuries, see P. Kibre, *The Nations in the Mediaeval Universities* (The Mediaeval Academy of America), Cambridge, 1948, p. 39, note 64.

[88] *Chart. univ. Paris.*, II, pp. 263-265, no. 814; Arch. Nat. MM 266, p. 24.

[89] *Chart. univ. Paris.*, II, pp. 263-265, no. 814; Arch. Nat. MM 266, pp. 24-26.

Most of the above arguments the university members characterized as trifling. They answered the objection to the statute on the basis of its conflict with the earlier law, that what touches all ought to be approved by all, with the assertion that the statute in question was not made by the cathedral chapter of Paris, that it was not such a statute as would require that the persons named by the defense be called. The present dictum, the university insisted, provided a sufficient basis for the official of the bishop of Paris, the minister and executor of the law, to act upon. He could discern by this statute that such a person as the defendant was not qualified to practice the medical art. The final verdict against Jacqueline Félicie, issued on November 2, 1322, found her and several others named at the same time, guilty of willful disobedience. She and the others were prohibited by a solemn reiteration of the original sentence of excommunication from practicing medicine or from exercising the functions of a physician under the further penalty of a fine of sixty Parisian pounds.[40]

Despite the specific character of this condemnation, it is quite apparent that illegal practice by charlatans and empirics continued. In the search for a remedy the medical faculty turned to the pope for aid and humbly beseeched him to take some action. On June 21, 1325, Pope John XXII wrote to Stephen, bishop of Paris, to urge his cooperation in preventing those ignorant of the art of medicine from practicing in Paris or its suburbs. The pope stated that he had been informed in a petition drawn up by the masters and scholars of the university that persons ignorant of the medical art, old women particularly, and even more to be detested, soothsayers, as well as others, were presuming to practice medicine in the city and environs of Paris, and that these charlatans were causing many deaths. In complying with the university's petition, the pope further asked the bishop of Paris to make careful inquiries into the reports, and, if necessary, to endeavor to find out the truth by calling a council of men learned in medicine whose advice he should then follow.[41]

Whether from inaction of the bishop of Paris or because the bishop's efforts had no greater success in securing an elimination of illegal practice

[40] *Chart. univ. Paris.*, II, p. 267, no. 816; Arch. Nat. MM 266, p. 23. The list of other persons condemned at the same time as Jacqueline for practicing illegal medicine included several women: Domina Jacoba, Johanna Conversa, wife of John Liblous who was also condemned for illegal practice of medicine (cf. Wickersheimer, *Dictionnaire*, II, 505; *Chart. univ. Paris.*, II, pp. 256, 267); also Margarita de Ypra, surgeon, and Belota Judea. Others included were Stephanus Burgundus or Etienne Burgondus, empiric, and Master Jacob Lépelé.

[41] *Chart. univ. Paris.*, II, pp. 285-286, no. 844.

than the earlier efforts of the university itself, Pope John XXII again found it necessary, some five years later, on January 1, 1330, to address the new bishop of Paris, Hugh, on the subject of those illegally practicing medicine in the city and suburbs. His information regarding the presence of several such persons in the city had once again come from the university. He urged the bishop to make every effort to see that henceforth no one was permitted to practice medicine in the city or suburbs of Paris unless he was a master or was licensed in the art, or was otherwise known to be qualified by having been approved by a council consisting of the dean of the medical faculty and two of the masters then lecturing on medicine in the university. Those who should disobey this dictum must, he said, be subjected to ecclesiastical censure.[42]

Between 1330 and 1332 the medical faculty was involved in a dispute with the chancellor over the granting of licenses. In the course of the quarrel the faculty sought for and obtained the support of the pope, of the king, and also of the provost of Paris. The final settlement reaffirmed the faculty's right to determine the qualifications necessary for the licensing of candidates for medical teaching and practice. The chancellor would henceforth be obliged to confer the license on anyone whom the faculty declared worthy and qualified.[43]

Throughout the fourteenth century papal support for the faculty's supervision of medical practice continued. Clement VI, in 1340, threatened with excommunication not only those who should attempt to practice in Paris without the approval of the medical faculty but also those who should utilize the services of such physicians. Nevertheless illegal practice continued.[44] In 1347 (January 27), the dean and the faculty of medicine were obliged to petition the pope further for aid against those who were practicing illegally. Their petition again reported that there were at Paris men and women audaciously usurping the office of physician and engaging in the practice of medicine about which they knew little or nothing. To remedy this situation it was urged that the pope ask the bishop of Senlis, the conservator of the university's apostolic privileges, to use his authority to forbid anyone to practice medicine unless he was a master of the art or science of medicine or had at least been licensed in

[42] *Ibid.*, II, pp. 336-337, no. 900; and cf. no. 844 for a similar letter. In Arch. Nat. MM 266, p. 160, 'ad an. c. 1331,' are noted several illicit practitioners at Paris (*Chart. univ. Paris.*, II, p. 337, note).

[43] *Ibid.*, II, nos. 918-943, for the entire conflict. For the instrument of composition of the difficulties, see *ibid.*, II, pp. 397-399, no. 943.

[44] BN fonds franç. 22110, fol. 387r.

another university. He was also to announce to all transgressors that they would be punished by ecclesiastical censure.[45] Three years later, on April 2, 1350 (1351), the faculty was still trying through one of its representatives, Adam of Francovilla, at the papal court to obtain articles with the pope's signature against illegal practice.[46] Restrictions on student doctors were also tightened on February 3, 1375, by the measure requiring all bachelors in medicine or those not yet licensed to take an oath that they would not practice medicine nor visit the sick, unless they were accompanied by one of the masters in the faculty.[47]

The university made further efforts too to subject the apothecaries to specific regulation. In addition to the provisions relating to the dispensing of medicines contained in the statutes of 1271, the medical faculty had, on February 28, 1322, drawn up new articles, " in the public interest," which required that all apothecaries and dealers in drugs appear each year before the assembled faculty to take the oath that they were doing everything in their power to carry on effectively their work as apothecaries and herbalists. They must also swear that they were keeping on hand for easy reference a corrected copy of the *Antidotarium* of Nicholas of Salerno;[48] that they were using true and accurate weights tested according to those used at the fairs; that they would not use for filling prescriptions any medicines that had been corrupted; and that if they could not obtain the simples called for in their recipes they would use no other substitutes than those provided for in the *Quid pro quo*.[49]

The ordinances provided also that the dean of the medical faculty and one apothecary chosen by the faculty would make periodic visits to the apothecary shops to look over the stocks of medicines. The apothecaries were prohibited from dispensing any medicinal laxatives or opiates which

[45] *Chart. univ. Paris.*, II, pp. 602-603, no. 1138.

[46] To defray the expenses incurred by Adam of Francovilla, the faculty was obliged to levy a tax on all its members: *Chart. univ. Paris.*, III, pp. 7-8, no. 1197; Arch. Nat. MM 266, p. 161.

[47] *Chart. univ. Paris.*, III, pp. 217-218, no. 1396.

[48] *Ibid.*, II, pp. 268-269, no. 817, and note. For Nicholas' Antidotarium, see also *ibid.*, I, p. 517, note 4. Nicholas probably flourished at Salerno in the twelfth century and is unknown except as author of the Antidotarium. See further for the work G. Sarton, *Introduction to the History of Science* (3 vols., Baltimore, 1927-48), II, 239-240.

[49] The Quid pro Quo (*Chart. univ. Paris.*, II, p. 569, note 6), which frequently appears with the Antidotarium of Nicholas, is probably by him. It gives an alphabetical list of medicinal simples or drugs with their substitutes. In the oath taken in 1422 by the apothecaries, they had to swear that they would not substitute one drug for another in the prescriptions except by the permission of the master who had given the original prescription; see below, note 51.

they had not first shown to the dean and the aforementioned apothecary, and had indicated the use to which they were to be put. They were further prohibited from selling or dispensing any laxative medicines, aborticides, poisons, or any other dangerous drugs, to any person without the advice of a physician who had been officially approved in the university of Paris, or in some other recognized university. Anyone who wished to become an apothecary must first read and swear to obey these regulations.[50]

The faculty ordinances relating to dispensers of drugs were later strengthened by royal mandate. On May 22, 1336, King Philip VI of France addressed the provost of Paris and his lieutenant to the effect that they must enforce the law requiring apothecaries to take the oath to obey the ordinances of the medical faculty. The apothecaries were also to be required to swear that they would take care to see that their subordinates and the herbalists took the same oath to uphold and observe the ordinances. The provost was asked to make certain that the regulation requiring the showing of the medicinal laxatives and opiates to the masters of the faculty of medicine were enforced, and that care was taken to ensure that the medicines were fresh and good and that they had not been permitted to become spoiled or soiled.[51]

Despite the foregoing measures, King John of France, in December of 1352, asserted that according to information received from the dean and masters of the faculty of medicine there were many unauthorized persons of both sexes dispensing drugs and medicines freely in Paris. Included in their number were old women, monks, rustics, apothecaries, and numerous herbalists, also students of the medical faculty not yet licensed,

[50] *Chart. univ. Paris.*, II, pp. 268-269, no. 817. For statutes of the corporation of herbalists (épiciers) at Paris, see *Les métiers et corporations de Paris*, ed. by Lespinasse, Paris, 1886, pp. 500, 503; *Chart. univ. Paris.*, II, 269, note 2.

[51] *Ibid.*, II, 269, note 2; p. 462, no. 1001; *Ordonn. des Rois*, II, p. 116. The mandate of Philip VI referred directly to the university statute of Febr. 1322; similarly King John's ordinance regarding the apothecaries in 1353, also agrees in large part with the faculty provisions of 1322: *Ordonn. des Rois*, II, 532. The earlier ordinances were also confirmed by Charles VI in 1390 (Aug. 3); and by Charles VII, on November 30, 1437: *Chart. univ. Paris.*, III, p. 534, no. 1586; IV, 601-602, no. 2515. See also the "Oaths required of Apothecaries at Paris," October 2, 1422, by the faculty of medicine: *Chart. univ. Paris.*, IV, pp. 406-407, no. 2196; translated by L. Thorndike, *University Records*, pp. 298-299. At this time (1422) the apothecaries were required to swear that they had on hand a corrected copy of the Synonyms (of Simon a Cordo of Genoa, physician to Pope Nicholas IV (d. 1292), and chaplain to Pope Boniface VIII (d. 1303): G. Sarton, *Introd.*, II, p. 1085), and of the Circa instans of Platearius, a pharmaceutical work, probably of the late twelfth century. See further Wickersheimer, *Commentaires*. Introduction.

The oldest statute regarding apothecaries at Montpellier, appears to date from the year 1340: *Cartulaire de l'université de Montpellier*, I, p. 344, no. 12.

or coming from other localities to practice in Paris. Such persons, although they were ignorant of the science of medicine, were unacquainted with the complexions and constitutions of men, and lacked knowledge of the virtues of medicines as well as of the time and method for administering them, were nevertheless administering them freely. The king found this a highly offensive proceeding, as well as a very dangerous one. For, his report continued, in such medicines, particularly laxatives, if administered unduly, lurks peril of death. Furthermore according to the reports, not only were these charlatans dispensing drugs about which they knew nothing, they were also applying clysters, and practicing phlebotomy, without calling in the aid of a qualified physician. Such shameful practices were resulting in "clandestine homicides and abortions on every hand and sometimes publicly." Accordingly, the king in his desire to provide for the welfare of his subjects, forbade anyone of either sex or of any condition whatsoever, "to administer any medicine, alterative, laxative, sirup, electuary, laxative pills, or clysters of any sort," for symptoms that he did not understand. No one was to administer opiates or offer medical advice or otherwise exercise the office of a physician in any way unless he was master or a licentiate in the science of medicine at the university of Paris, or in another university, unless he was acting under the advice and direction of a master of the university, or had been otherwise approved by the faculty of medicine as qualified to practice. The provost of the city of Paris was to have the power to enforce this edict by imposing pecuniary and other civil penalties upon those who should disobey it.[52]

In addition to the foregoing provisions, the king further decreed, in August 1353, that the pharmaceutical establishments of the city of Paris and of its environs must be visited twice each year, namely about Easter and at the feast of All Saints (November 1), by a commission made up of representatives of masters of the apothecary art together with two masters of medicine. Apothecaries were also prohibited from delivering any medicinal remedies without an express commission from a physician. Any apothecaries or pharmacists who violated the royal ordinances were to be punished severely.[53]

[52] *Chart. univ. Paris.*, III, pp. 16-17, no. 1211. The document is translated into English by L. Thorndike, *University Records*, pp. 235-236. See also *Chart. univ. Paris.*, II, p. 462, no. 1001; and *Les métiers et corporations*, ed. by Lespinasse, Paris, 1886, p. 504. For near deaths caused by illegal practitioners, see also *Chart. univ. Paris.*, II, p. 337, note.

[53] *Ibid.*, III, p. 20, no. 1215. The king was said to have confirmed certain ancient ordinances of the university (*Ordonn. des rois*, II, 532; and cf. *Chart. univ. Paris.*, II, p. 268).

It does not appear that the royal edicts were any more efficacious in stamping out charlatanism than were those of the university. On August 3, 1390, another royal ordinance indicated the continued persistence of illegal practice. Charles VI on that date reported to the provost of the city of Paris and to his other justices that the king's attention had been called to the fact that in Paris persons without approval or license were engaging in medical practice as well as in surgery. Such persons were said to be visiting patients and to be promising to effect cures which they were unable to accomplish. The king therefore demanded that the provost and other justices investigate these charges and take appropriate action against those who were found to be unqualified and who were practicing without the approval of the medical faculty.[54]

There was also at Paris, as in Naples and Salerno, an attempt made to regulate the practice of surgery, although this was at first primarily a municipal concern rather than that of the university.[55] The separation of manual surgeons from the medical faculty was rigorously maintained through the fourteenth and early fifteenth centuries.[56] The masters in medicine were, however, on occasion called in for consultation at the trials of unauthorized persons operating as surgeons. This is illustrated in the case of Perretta Petonne who, at the instance of the masters of the surgeons, was arrested in 1411 for operating as a surgeon although she had not been approved by either the physicians or surgeons. Her case was already before the Parlement in 1410. She had first been interrogated, on June 9 of that year, by masters in medicine who had tried to find out if she could read. Their conclusion was that she did not know an "*a* from a fagot," and furthermore that she did not know what were the

[54] *Ibid.*, III, pp. 534-535, no. 1586; *Ordonn. des rois*, VII, 353.

[55] As early as 1307 a municipal statute provided that barbers who practiced surgery were forbidden to do so unless they had been examined by six masters of surgery who had been named by the provost of Paris and who had been sworn in and made responsible for the loyalty and qualifications of the surgeons (BN fonds fr. 11709, fols. 14r, 13v; 86r-v). The ordinance was renewed in 1311 by Philip IV who put master Jean Pitard, his surgeon, in charge of the examining masters of surgery (*Chart. univ. Paris.*, II, p. 149, no. 692, and note) and by succeeding monarchs (*Chart. univ. Paris.*, III, p. 14, no. 1205; also *ibid.*, III, pp. 42, 70-71, 113; IV, pp. 423, 618). See also Wickersheimer, *Commentaires*, introduction pp. lxxvi *et seq.*

[56] Thus on June 9, 1408, the faculty of medicine in its congregation considered the case of Johannes de Pisis, a surgeon, who before his acceptance into the faculty had manually operated. This master was summoned before the faculty and was required to promise under oath that he would no longer operate manually in public surgery at Paris: *Chart. univ. Paris.*, IV, p. 156, no. 1853. Cf. E. Wickersheimer, *Commentaires*, pp. lxxvi, 5, 47.

properties of herbs in prohibited remedies, such as "ache" and "ysope." At a second interrogation, on June 16, when the sick persons treated by Perretta were summoned to testify, Perretta declared that she was working "for God." She asserted that it was unjust that she should be molested when several other women were engaged in the practice of surgery at Paris, yet they were not being interrogated. The chief objection to Perretta, as the learned editors of the *Chartularium* noted, was not her sex, but the fact that she was practicing without the approval of the commission of municipal surgeons.[57]

In 1436 the surgeons were admitted as actual scholars in the faculty of medicine. They were allowed to attend lectures but could not proceed to the degree. However, they were as scholars to enjoy all "the privileges, franchises, liberties, and immunities conceded to the university." The reasons set forth by the university for the admission of the surgeons to the faculty of medicine, were that "in recent times," against the good of the public, many unapproved, false, or fictitious surgeons, who were corrupting and destroying the venerable science of surgery were making of it a public horror and scandal to the detriment of the people. The reference was to the struggle that was being carried on between the surgeons and the inferior class of barbers. The latter were claiming that they could operate surgically in certain cases although they had not been approved by the commission of municipal surgeons.[58]

Some seven years later, in 1443, the surgeons and the medical faculty also united to make common cause against a group of illicit medical practitioners called "cabusatores et cabusatrices." But not long thereafter, in 1446, a conflict broke out between the surgeons and the medical faculty when the surgeons did not respond to the call to a faculty convocation. The faculty had demanded that the surgeons take an oath in the presence of the faculty that they would refrain from going outside their proper

[57] *Ibid.*, p. 60; *Chart. univ. Paris.*, IV, pp. 198-199, note 1, no. 1912. It would appear that medical and surgical studies were not considered unsuitable for women. This is illustrated by the plan of education outlined, in 1309, by Pierre Dubois. In his treatise "On the Recovery of the Holy Land," Pierre Dubois stated that "to educate the girls in medicine and surgery, it will be advisable that two girls more highly trained than the others in medicine and surgery and their experiences remain to teach the others both theory and practice": selection translated by L. Thorndike, *University Records*, pp. 148-149. See further on women physicians in the middle ages, E. Nicaise, introduction to his edition of *Guy de Chauliac*, pp. lxiii *et seq.*, p. 16.

[58] *Chart. univ. Paris.*, IV, pp. 594-595, no. 2496; Wickersheimer, *Commentaires*, p. 162. For the litigation between the surgeons and barbers, see *Chart. univ. Paris.*, IV, pp. 442-443, no. 2253; also *ibid.*, IV, pp. 675-676, no. 2621.

field of activity and that they would not prescribe digestive and laxative medicines or sedatives. This the surgeons refused to do.[59]

On January 11, 1494, the medical faculty opened its lectures to the corporation of the barbers. Up to that time the barbers had apparently taught each other. At one time a student in the medical faculty had acted as their teacher, but he had been obliged by the faculty to discontinue.[60] The surgeons requested that the faculty once again close its doors to the inferior barbers, and finally, in 1495-1496, reached an accord with the faculty. Not long afterward, however, in 1498, the medical faculty again complained that the surgeons were prescribing alterative and laxative medicines. It was not until 1506 that amicable relations were finally restored between the surgeons and the medical faculty.[61]

That the combined efforts of the medical faculty, the popes, the kings of France, as well as of the municipal magistrates, were unable to succeed in stamping out illegal practices in medicine, surgery, or in the sale and preparation of medicaments and drugs,[62] is amply illustrated by the continued reiteration of measures against these practices. In the first quarter of the fifteenth century, Henry V of England, as one of the first of his acts as regent of France, reaffirmed the statutes of the French monarchs against such evils. He threatened with imprisonment anyone found to be practicing without authorization or a license from the medical faculty of the university.[63] Nevertheless the university was obliged, from the year 1423 on, for some ten years, to carry on a long and wordy suit in the Parlement of Paris against a certain Jean de Domremi who designated himself physician, surgeon, and visitor of the surgeons of the kingdom, although apparently he had no official authorization whatever.[64]

Numerous other instances could be cited for the continuation of unauthorized and unlicensed medical practice both before and after 1500

[59] Wickersheimer, *Commentaires*, pp. 171, 179, 210.

[60] *Ibid.*, pp. 331-332; 353.

[61] *Ibid.*, pp. 365, 368, 390, 397, 403, 404, 474-478, 483.

[62] On December 7, 1437-1438 the medical faculty assembled to hear the response of the herbalists on the question of whether they would take the required oaths or not. The herbalists did not bother to appear and were declared, after they failed to heed a second summons, contumacious and hence subject to excommunication: Wickersheimer, *Commentaires*, p. 163.

[63] *Chart. univ. Paris.*, IV, p. 423, no. 2227; E. Nicaise, introduction to his edition of *Guy de Chauliac*, p. lxiii, cites a manuscript for the ordinance of Henry V in 1420.

[64] *Chart. univ. Paris.*, IV, pp. 424-428, nos. 2228-2231; *Journal de Clement de Fouquebergue, Greffier du Parlement de Paris, 1417-1435*, ed. by A. Tuetey (Société de l'histoire de France, 3 vols., Paris, 1903-1905), II, 168, 223, note 1, 224; *Wickersheimer, Commentaires*, pp. 129-149.

and even into our own time. The medical faculty of the university of Paris had thus been unsuccessful in its contest against such practice, and the university records of the fourteenth and fifteenth centuries reveal the obstacles encountered in the attempts to enforce the approved license requirements and to prosecute those who practiced without them. On occasion our sympathy may go out to such an empiric or natural healer as Jacqueline Félicie appears to have been. But there seems little doubt that the enforcement, by licensing, of specific requirements and qualifications was, then as now, in accord with the public interest. The continued instances of charlatanism, quackery, and illegal practice even into our own day illustrate the inherent difficulties of the problem. The efforts, therefore, of the medical faculty of the university of Paris in initiating in Paris the contest against these practices and in enlisting against them successively the aid of ecclesiastical, municipal, and royal authorities would appear worthy of our interest and earnest consideration.

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CAMERALISM AND THE CONCEPT OF MEDICAL POLICE

GEORGE ROSEN

I

In 1779, there appeared the first volume of the monumental *System einer vollständigen medicinischen Polizey* of Johann Peter Frank (1745-1821). During his lifetime six more volumes were issued, with two volumes appearing posthumously. This work is today considered a landmark in the history of thought on the social relations of health and disease. Nevertheless, to assess correctly the significance of Frank's work it is important to see it in terms of the social, political, and ideological context within which it appeared. Central to Frank's thought is the concept of medical police. The origin and growth of this idea require exploration. This essay seeks to study the development of the concept of medical police in the thinking of various individuals, and to show how the idea and the proper methods for achieving it grew in clarity and power until they reached their highest form in the work of Johann Peter Frank.

II

Admiration for the virtues of a growing population, and an intense desire to increase the number of people within a country mark the political and economic views of the later seventeenth century and of most of the eighteenth century.[1] This enthusiasm for increased numbers found expression in many quarters. In 1668, Johann Joachim Becher, a German physician, chemist, promoter of projects, and a writer on political and economic subjects, published a discourse on the rise and fall of cities and states.[2] This work lays great stress on the necessity of populousness. Becher's brother-in-law, the Austrian lawyer and privy councillor Philipp Wilhelm von Hörnigk, took the view that creation of population was the prime function of the state. All measures possible should be taken to

[1] Eli F. Heckscher: *Mercantilism* (2 vols.), London, George Allen and Unwin, Ltd., 1934, vol. II, pp. 158-161.

[2] Johann Joachim Becher: *Politischer Discurs von den eigentlichen Ursachen des Auf—und Abnehmens der Städte, Länder und Republiken, in specie, wie ein Land Volkreich und Nahrhaft zu machen und in eine rechte Societatem civilem zu bringen*, Frankfurt, 1668. For Becher see Wilhelm Roscher: *Geschichte der National-Oekonomik in Deutschland*, second edition, München und Berlin, R. Oldenbourg, 1924, pp. 270-289.

achieve as large a population as can be maintained.[3] Similar views were strongly advocated in England and Scotland. An elaborate economic program prepared for Queen Anne around 1707 by Nehemiah Grew, physician and botanist, concludes with a chapter entitled "Of the Means of Multiplying Your Majesties People for the Speedier Progress of the Aforesaid Improvements."[4] David Hume, the philosopher, urged that the state actively foster the growth of population by encouraging all institutions that favored this process and eliminating those that did not.[5] French thinking on this problem expressed itself even more in deeds than in words. In terms of actual measures taken to stimulate an increase in population, France outstripped all other countries.[6] As part of his economic program, Jean Baptiste Colbert, the minister of Louis XIV, sponsored laws to grant tax exemptions for early marriage. Indeed, in an act of 1669 applying to Canada, he went so far as to impose fines on fathers who did not marry off their daughters before the age of sixteen and their sons before twenty. A year earlier, Colbert had written to the Intendant in Canada that "An Intendant must not believe that he has done his duty unless he has made sure of a yearly increase of at least 200 families." In the same spirit a French official in 1711 proposed that a subsidy of 30 *livres* be given for every marriage, urging his proposal on the ground that "since this assistance will be given only to young people, it is not entirely useless to the state, for it will supply subjects at a cheap price."

This almost fanatical emphasis on a dense population was justified on political, economic, and military grounds. The commonly held view is neatly summed up by John Bellers, a Quaker cloth merchant of London. "Regularly laboring people are the Kingdom's greatest treasure and strength, for without laborers there can be no lords; and if the poor laborers did not raise much more food and manufacture than what did subsist themselves, every gentleman must be a laborer and every idle man must starve."[7] A larger population meant greater production as well as greater consumption, two ideas aptly phrased by Daniel Defoe. "The

[3] Philipp Wilhelm von Hörnigk: *Oesterreich über Alles, Wann es nur will* . . . , 1684. See Roscher, *op. cit.*, pp. 289-293.

[4] E. A. Johnson: *Predecessors of Adam Smith*, New York, Prentice-Hall, Inc., 1937, 1937, p. 136.

[5] *Ibid.*, p. 178.

[6] Heckscher, *op. cit.*, pp. 160-161.

[7] John Bellers: *An Essay towards the Improvement of Physick, in twelve proposals, by which the lives of many thousands of the rich, as well as the poor may be saved yearly.* . . . London, J. Sowle, 1714, p. 37.

more mouths, the more wealth," he said. With regard to consumption he argued that " Multitudes of people if they can be put into a condition to maintain themselves, must increase trade; they must have food, that employs land; they must have clothes, that employs a long variety of trade." [8] Another weighty point in favor of a large population was that more people meant a greater revenue for the monarch. Furthermore, that ingenious physician, scientist, and economist, William Petty, urged that greater administrative economy would be yet another fiscal advantage of increased numbers.[9]

These examples taken from a host of others obviously are not the opinions and actions of men concerned with imaginary conditions and abstract problems. For any adequate appreciation of their relevance to practical affairs, they must be seen as part of something broader and more comprehensive, as part of a scheme of policy and organization whose supreme aim was to place social and economic life in the service of the power politics of the state. This was the system that came to be known generally as *mercantilism*, or as *cameralism* in its more politically-oriented, specifically German form.[10]

From a political standpoint, mercantilism has often and properly been described as the policy of power. The idea of mercantilism is not exhausted, however, in such a description of its content. Mercantilism was much more than this; it was also a conception of society. As such it comprised certain ideas of the social relations of individuals and groups, and of the way in which they should be treated in matters of social policy.

The attitude of mercantilist thought to organized society is characteristically revealed in its relation to the state. The welfare of society was regarded as identical with the welfare of the state. Since power was considered the first interest of the state, most elements of mercantilist policy were advanced and justified as strengthening the power of the realm. Politically, *raison d'état* was the fulcrum of social policy.[11]

[8] Johnson, *op. cit.*, pp. 249-250.

[9] *The Economic Writings of Sir William Petty*, edited by C. H. Hull (2 vols.), Cambridge, at the University Press, 1899, vol. 1, pp. 255-256.

[10] For discussion of mercantilism every student is deeply indebted to the monumental study by Heckscher cited above. Variant views are to be found in *Lecture Notes on Types of Economic Theory*, as delivered by Professor Wesley C. Mitchell (2 vols.), New York, Augustus M. Kelley, 1949, vol. I, pp. 15-23, 48-61; and in Maurice Dobb: *Studies in the Development of Capitalism*, London, George Routledge & Sons, 1946, pp. 177-220. See also Louise Sommer: *Die Österreichischen Kameralisten in dogmengeschichtlicher Darstellung*, Wien, Carl Konegen, 1920-25, especially part one, pp. 43-56.

[11] For discussion of the history of raison d'état see Friedrich Meinecke: *Die Idee der Staatsräson*, München und Berlin, Verlag R. Oldenbourg, 1924.

What national power required, as the rulers and their advisers saw it, was first of all a large population; second, that population should be provided for in a material sense; and thirdly, that it should be under the control of government so that it could be turned to whatever use public policy required. While mercantilist doctrine in its application received varying emphasis at different times and in various places, it was recognized everywhere in some degree that effective use of population within a country required attention to problems of health.

III

The framework for the development of German thought and action on the social relations of health was provided by *cameralism*, the German variety of mercantilism. The term cameralism has two connotations. On the one hand, it designates the ideas that appeared to explain, justify, and guide the centralizing tendencies and practices in administration and economic policy of the absolute monarchy in the German states during the later seventeenth and eighteenth centuries. On the other hand, it refers to the various attempts of the same period to work out in terms of emerging contemporary political and social science a systematic account of the functioning of the various administrative services as a basis for the training of public officials.

Historically, cameralism was part of the process of legal and administrative consolidation in the growth of the modern state. Proceeding from the household of the sovereign as a point of crystallization, the modern state in its evolution advanced from a loose federation of provinces united by the person of a monarch to actual territorial amalgamation by means of institutional unification and administrative centralization. The task of cameralism as a discipline was to supply the positive content for the occasions of state action, and to systematize the growing number of state functions. This development is characterized by the establishment, in 1727, by Friedrich Wilhelm I of the first two professorships for the teaching of cameralism, one at Frankfurt a. d. Oder, the other at Halle.[12] Indeed, the entire process is not unlike that which in our own time led to the appearance of schools of business and business administration following upon the rapid expansion of industry in the later nineteenth century, which centered attention on the organizational and directive features of business.

[12] Albion W. Small: *The Cameralists. The Pioneers of German Social Polity*, Chicago, University of Chicago Press, 1909, pp. 207-210, 222.

Within the framework of cameralism, the idea of *police* is a key concept in relation to problems of health and disease. Derived from the Greek *politeia*, the constitution or administration of a state, the term police (*Policey*) was already employed in a related sense during the sixteenth century by several German writers who deserve to rank as forerunners of the seventeenth and eighteenth century cameralists. One of these was Melchior von Osse (1506-1556) who, in 1556, at the command of the Elector of Saxony prepared a monograph containing his reflections and observations on the proper conduct, organization, and function of a "Christian magistracy."[13] This document, know as Osse's *Testament*, begins with the following paragraph:

> It is among all wise people beyond dispute, [says Osse], that every magistracy (*Obrigkeit*) may prove and make evident its virtue and aptitude in two ways. First, in time of war, through manly deeds, good sagacious projects, and protection of their lands and subjects, second, in time of peace, through ordering and maintaining of good godly righteous government, judiciary and Policey.[14]

In Osse's time administration was unspecialized and not systematized. Governmental activities were relatively inchoate and confused. In keeping with this situation, Osse's presentation of the police concept is general and diffuse. A good *Policey* of a state or city requires a ruler, wise counsel, unpartisan judiciary, and a pious obedient people.

> Everything should be directed toward keeping these four parts in good condition, if one is to maintain a good *Policey*, for a lord and ruler is in three respects under obligations to the people divinely intrusted to him; namely, that he should maintain the same in good prosperous circumstances, which occurs when the people (*das Volck*) lives virtuously, and some among them are promoted to learning, and to good arts, and many wise and learned people are in their number, from whom the rest may receive good instruction, and they are not left to wander in the darkness of ignorance, and everything through which such promotion of things useful to the community is hindered is either prevented or averted by the ruler.[15]

This statement is significant in that it contains in embryo the assumptions of cameralism.

Another early form of the police concept appeared some sixty years later in a posthumous work by Georg Obrecht (1547-1612), professor of law at Strassburg.[16] Written at the request of his friend Emperor

[13] *Ibid.*, pp. 21-25.
[14] Cited by Small, *op. cit.*, pp. 25-26.
[15] *Ibid.*, pp. 37-38.
[16] See Roscher, *op. cit.*, pp. 151-158; Small, *op. cit.*, pp. 40-59; Axel Nielsen: *Die Entstehung der deutschen Kameralwissenschaft im 17. Jahrhundert*, Jena, 1911.

Rudolf II and published in 1617 under the title *Fünff underschiedliche Secreta Politica*,[17] it set forth Obrecht's economic views. Of the five monographs contained in this work, the fourth outlines a scheme of police (*Ein sondere Policey-Ordnung, und Constitution* . . .). The underlying concept is presented in a preface:

> The following Police Order and Constitution, with its seven Sanctions (*Sanctionibus*) is ordained by us especially that we may every year, and as far as practicable at all times, have reliable information how matters stand with all our subjects, young and old, rich and poor, in all parts of our jurisdiction and territory, and also how matters stand with our whole *Policey*, and all of its branches, and how, in this later wholly perverted time, they may be protected against ruin, and may be sustained in constant integrity; and how we may bring it about, after ascertaining all the facts, that our subjects may rightly, well and usefully bring up their children, and themselves lead a Christian, worthy life, and thus so conduct themselves that they may be to their children, to us their divinely appointed rulers, to their neighbor, and to the common weal, a blessing and an honor, to their own temporal and eternal advantage.[18]

Toward this end Obrecht proposed an elaborate plan for registration and regulation of the people from birth to death. Actually, in this proposal he outlined a complete system of population statistics. Furthermore, in connection with this scheme, Obrecht also suggested a plan of savings and endowment insurance for children.

From these beginnings, the police concept was expanded and carried further by a number of German writers and public officials.

An early but pregnant formulation of the cameralistic approach to the health problems of social life was presented by Veit Ludwig von Seckendorff (1626-1692), whose writings were well received by his contemporaries and exercised considerable influence even after his death. Throughout most of his life, Seckendorff served in various administrative posts at the ducal courts of Gotha and Sachsen-Zeitz.[19] His most persistent influence was exerted through his book, *Der Teutsche Fürsten Staat*, a compendium of civil law and administrative practice, which first appeared in 1655 and passed through eight editions, the last published in 1754.

According to Seckendorff, the appropriate aim of government is to establish such ordinances as will assure the welfare of the land and the

[17] Five different political secrets.

[18] Quoted by Small, *op. cit.*, p. 57.

[19] See Small, *op. cit.*, pp. 60-106; Roscher, *op. cit.*, pp. 238-252; Alfons Fischer: *Geschichte des deutschen Gesundheitswesens* (2 vols.), Berlin, F. A. Herbig, 1933, vol. I, pp. 327-328.

people. Since prosperity and welfare manifest themselves in growth of population, means must be taken to guard the health of the people so that their number may increase. A governmental program must concern itself with the maintenance and supervision of midwives, care of orphans, appointment of physicians and surgeons, protection against plague and other contagious diseases, excessive use of spirituous beverages and tobacco, inspection of food and water, measures for cleaning and draining towns, maintenance of hospitals, and provision of poor relief.

Seckendorff has been called the Adam Smith of cameralism,[20] an illuminating if not entirely apt comparison. His work already contains in embryo a program for the management of material and human resources, which at the hands of his successors was developed into a significant branch of public administration. Known as the science of police (*Polizeywissenschaft*), this branch of administrative theory and practice provided the basis upon which the concept of medical police could be developed.

The same may be said of Becher, another writer of this period to whom we have already referred. For Becher the object of a proper police is attained through good administration and social regulation. It is the office of the rulers "by good laws to maintain, protect, govern and control their subjects in the true religion; love and knowledge of God; in good morals, discipline, honor and integrity; in good and various sciences; with respect to their support and legitimate earnings, their health and life, also legitimate increase. In these five points consists the origin of all laws and the foundation of authority and obedience." How are these five departments of government to be carried on? The answer is that five *collegia* or bureaus should be created to have charge of these areas of administration. One of these should be a *collegium vitale* with the responsibility of protecting the health of the subjects.[20a]

Even more specific proposals along the lines suggested by Obrecht, Seckendorff, and Becher were made during the latter half of the seventeenth century by Gottfried Wilhelm von Leibniz (1646-1716), the great German philosopher, scientist, and politician. In all his many sided practical activities, Leibniz on numerous occasions referred to health problems and to modes of government action in such matters. A memorandum of September 1678, prepared for Duke Johann Friedrich of Hannover and headed "Thoughts on State Administration," proposed the creation of a "political topography or a description of the present

[20] Small, *op. cit.*, p. 69.

[20a] Small, *op. cit.*, pp. 124-125.

condition of the country." [21] This should include the number of cities, towns, villages and where necessary individual houses, as well as the total population of the country and its acreage. There should also be an enumeration of the number of soldiers, merchants, artisans, and journeymen, as well as information on the relation of the crafts to each other. Then there should be a listing not only of the numbers of deaths but also of the causes as in England.[22] One of the first to lay stress on statistical investigation, Leibniz's analyses of statistical materials formed the basis for later developments along such lines. Although acknowledging his indebtedness to Petty, he apparently formed his plan for a political topography independently.[23]

As to the manner in which this could be done, Leibniz had various proposals. He realized that such matters fell within the sphere of police. Thus, in 1680, in a series of notes prepared for the Emperor, he suggested the creation of a chief administrative office for police affairs. This office should include a health council.[24] Also during the eighties, Leibniz published several essays in which he indicated the need for adequate population and mortality statistics. In one of these essays he dealt with the establishment of a registration office, pointing out that in England and France mortality records were available and that information useful for politics and medicine had been derived from these sources. In a "Proposal for a Medical Authority," Leibniz again insisted on the significance of birth and death registration, the latter to include age, cause of death, and related circumstances. Having given much thought to the questions on which statistical data might supply the answers, he presented 56 questions under the heading, "Questions in political arithmetic concerning the life of man and related matters." [25] He was in-

[21] Gottfried Wilhelm Leibniz: *Sämtliche Schriften und Briefe*, Erste Reihe, *Allgemeiner politischer und historischer Briefwechsel*, herausgegeben von der Preussischen Akademie der Wissenschaften, Zweiter Band. 1676-1679, Darmstadt, Otto Reichl, 1927, pp. 74-77.

[22] John Graunt's *Natural and Political Observations upon the Bills of Mortality* first appeared in 1662 and the fifth edition in 1676, it is said under William Petty's supervision. Leibniz probably refers to this work.

[23] Essai de quelques raisonnemens nouveaux sur la vie humaine et sur le nombre des hommes, *Die Werke von Leibniz*, herausgegeben von Onno Klopp, 1. Reihe, Bd. 5, Hannover, 1866, pp. 326-337.

[24] Leibniz, *Sämtliche Schriften*, Dritter Band, 1680-1683, Leipzig, K. F. Koehler Verlag, 1938, p. 405.

[25] In the original the three essays mentioned are entitled: *Von Bestellung eines Registratur-Amtes; Vorschlag zu einer Medizinal Behörde; Quaestiones calculi politici circa hominum vitam, et cognatae.* See *Die Werke von Leibniz*, herausgegeben von Onno Klopp, 1. Reihe, Bd. 5, Hannover, 1866, p. 315 ff.

terested in the total number of people in a country, their distribution according to age and sex, the number of women of child-bearing age, the number of men capable of bearing arms, the seasonal and local prevalence of disease, the causes of death differentiated according to acute or chronic diseases, and the relation of births to deaths.

It is not possible to point to any specific result produced by Leibniz's ideas and writings. Nevertheless, it is worth noting that, in 1688, the Great Elector undertook to determine the number of marriages, births, and deaths in Prussian cities and villages. Similarly, in 1685, a *Collegium sanitatis* was established in Prussia, perhaps in connection with Leibniz's proposal for a medical authority to supervise the public health.[26]

By the beginning of the eighteenth century, the police concept had gradually developed to a point where programs could begin to crystallize in institutional forms. This situation was well portrayed, in 1717, by Christian Thomasius (1655-1728), German jurist and political philosopher. These remarks occur, in Thomasius's edition of Osse's *Testament*, which he issued with a commentary. Taking Osse's chapter on police as his cue, Thomasius continues:

> This very year there appeared at *Franckfurth am Mayn* a book entitled *Entwurff einer wohleingerichteten Policey*.[27] . . . The author, who does not give his name, assumes that the flourishing condition of the financial system of a state must rest upon four chief pillars, namely *Policey*, fiscus, commerce, and taxation. The Policey has to do with the internal and external condition (*Verfassung*) of the state. The internal condition consists in part of a vigorous society, namely, (1) in a vigorous growth of the inhabitants, partly in a joyous life, both of the soul, namely, (2) in a religious worship, (3) in virtuous conduct, and (4) praiseworthy education; and of the body, in its sustenance, and satisfaction, through (5) abundance of necessary, useful, and superfluous means-of-life, (6) robust health, and (7) peaceful security. The external condition consists (8) in the good order of people, things and places, and (9) in a convenient ornamentation of city and country. On the contrary, every state is disintegrated and disordered through (1) decline of population, (2) disregard of religion, (3) vicious life, (4) neglect of education, (5) lack of sustenance and increase of the pauper class, (6) epidemics and plagues, (7) turbulence, revolts, and private quarrels, (8) irregular confusion of social strata, affairs, and places, (9) uncultivated lands and badly ordered towns. For promotion of the different kinds of good works, and removal of the evil, the author proposes in general the establishment of a *Policey* bureau, the members of which should be charged with (1) giving their earnest attention to the above points, (2) averting harmful occurrences, (3) controlling disorder, or (4) bringing complaints before the proper tribunals, (5) maintaining reliable

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[26] Alfons Fischer: *Geschichte des deutschen Gesundheitswesens* (2 vols.), Berlin, F. A. Herbig Verlag, 1933, vol. 1, pp. 295-296, 328.

[27] Sketch of a well-ordered police.

watchmen and detectives, (6) conducting unexpected visitations and inquisitions, (7) keeping a watchful eye on peaceful persons, things, and places in the state, (8) to that end drawing useful ordinance relating to persons and things, (9) responsibility for observance of same.[28]

The philosopher Christian Wolff (1679-1754) pointed out the close relation between the general welfare, which he identified with the welfare of the state, and the health of the people. In his *Vernünftige Gedanken von dem gesellschaftlichen Leben der Menschen*, published in 1721, Wolff showed that power consists above all in a rich and populous state. Lengthening the average life is important if it is desired to increase the number of people. It is clear, therefore, that good sanitary regulations are as necessary as prosperity. Contagious diseases must be prevented, and all known methods for improving the health of the community should likewise be employed.[29]

Still another indication of the development and systematization of cameralism and the police concept was the establishment by the King of Prussia, in 1727, of two chairs for the teaching of cameralism. The occupants of these positions were to teach the principles of economic management and of police, as well as other subjects so that the students would be well prepared to deal with administrative matters and to be candidates for the Prussian civil service.

Justus Christoph Dithmar (1677-1737) was designated to the chair of cameralism at Frankfurt a. d. Oder. Four years after he assumed his duties, he issued an outline of his academic lectures entitled *Einleitung in die öconomischen, Policey—und Cameralwissenschaften*.[30] Dithmar takes it for granted that the welfare and power of a state rest on a well-ordered economic, police and cameral system, and devotes Part IV of his work to the science of the police. How Dithmar conceived this subject is evident from his statement that the science of police "teaches how the internal and external nature of a state is to be maintained, with a view to general happiness, in good condition and order, and accordingly that the supreme magistracy of the country must have a care that their subjects shall not only be kept in good numbers, God-fearing, Christian, honorable,

[28] Quoted by Small, *op. cit.*, pp. 34-35.

[29] Christian Wolff: *Vernünftige Gedancken von dem gesellschaftlichen Leben der Menschen*, Halle, 1721, 275 and *passim*. See also C. E. Stangeland: *Pre-Malthusian Doctrines of Population: A Study in the History of Economic Theory* (Studies in History, Economics and Public Law, Vol. XXI, No. 3), New York, Columbia University Press, 1904, pp. 209-211.

[30] Introduction to the economic, police and cameral sciences.

and healthy life and conduct, and that their support and surplus of temporal goods shall be promoted by flourishing rural and town occupations; but also that a land shall be improved with well-laid-out cities, country districts and towns, and all kept in good conditions." [31]

In the chapter entitled "On the Maintenance of the Health of the Subjects," Dithmar discusses in some detail matters concerning the health of the community. Basing his comments on Seckendorff and Wolff, he urged the need for a large population and advocated measures to increase marriages. Healthy subjects could be expected only if the parents were healthy. Provision should be made for the training of skilled midwives. Preventive measures must be taken against contagious diseases, and care should be given to keep the streets clean, food pure, and the air clean. Trained physicians should be available to treat the sick, and hospitals and apothecary shops should be in proper condition. Finally, the conduct of health matters should be placed under a *Collegium medicum et chirurgicum*, in other words, an administrative authority to supervise the public health.

As the century advanced, the earlier idea of police was transformed more and more into a theory and practice of administration. This process was intimately related to the needs of the absolute state, and its most distinguished representatives were associated with the monarchs of Prussia and Austria. Outstanding in this connection are the names of three men—Darjes, Justi, and Sonnenfels.

Joachim Georg Darjes (1714-1791) was professor of law, first at Jena and later at Frankfurt a. O. According to Roscher, he was the most important of the cameralistic professors patronized by Frederick the Great.[32] Indeed, it was at his invitation that Darjes migrated in 1763 to Frankfurt. As a teacher he was distinguished by a capacity for systematization, attributable in part at least to his training under Christian Wolff. This faculty characterizes his *Erste Gründe der Cameral—Wissenschaften*,[33] published in 1756 at Jena. In it he created out of an encyclopedic mass of materials an orderly text suitable for the instruction of university students.

Encompassing the basic presuppositions of Darjes is the political theory developed by Samuel Pufendorf and further elaborated by Thomasius and Wolff. According to this doctrine, the theoretical basis of enlightened

[31] Quoted by Small, *op. cit.*, pp. 226-227.
[32] Roscher, *op. cit.*, pp. 419-420; Small, *op. cit.*, pp. 267-284.
[33] First principles of the cameral sciences.

absolutism, the state arose out of a social contract entered upon for self-preservation, a situation which impelled men to renounce their freedom. The purpose of the state is to secure for its people the greatest welfare and security, but it is left to the ruler of the state to determine what the greatest welfare is. The state is therefore entitled to intervene in the affairs of the people when this appears in the general interest. Consequently, the officials of the state must be trained to handle the manifold problems arising out of state action and regulation. Hence for Darjes cameralism embraced *Polizeiwissenschaft* as a science of management. He was aware that the welfare of men is related to three factors—to riches, to health, and to the enjoyment of rights. For this reason, the science of police is concerned with the population of the state, establishment of schools and universities, stimulation of subjects to work, arrangements of the state to preserve the health of the people, care of the poor, promotion of security, and preservation of the beauty of the country.

The leading representative of eighteenth century cameralism was Johannes Heinrich Gottlob von Justi (1717-1771). His development of the concept of police and of its attendant administrative technology sums up the views of his predecessors and represents the most characteristic expression of cameralism during the later eighteenth century. Justi taught at the *Collegium Theresianum* in Vienna from 1750 to 1753, where he gave a course on "economic and cameralistic sciences." From 1755 to 1757 he was active in Göttingen where he combined the office of *Polizeidirektor* with that of lecturer on cameralistic subjects. Later, in 1765, Justi entered the service of Frederick the Great as an administrator of mines. In 1768, he was arrested because of alleged irregularities in the financial administration of his office, and died, in 1771, while confined in the prison of Küstrin.

An advocate of enlightened despotism justifying the policies of Maria Theresa of Austria and Frederick II of Prussia, Justi based his administrative ideas on the political theory developed by the school of Pufendorf and Wolff. Accepting the doctrine that the state arose out of a social contract as a result of which men gave up their freedom, he made use of the postulate of the general happiness to provide an ethical basis for the regulation imposed by the absolute monarch. The relation between the ruler and his subjects was regarded like that of a father to his children. The people were not much more than the object of governmental care. In matters of health as in all other spheres of activity, the ruler knew what was best for his subjects, and by means of laws and administrative meas-

ures ordered what they should or should not do. The absolute patriarchal state is the ever-present working assumption in Justi's handling of social problems.

Justi's concept of administration and its application to matters of health are presented in two works—*Staatwirthschaft, oder systematische Abhandlung aller oekonomischen und Cameral—Wissenschaften, die zur Regierung eines Landes erfordert werden*, 1755, and *Grundsätze der Policey-Wissenschaft*, 1756.[84] In Justi's view, the internal administration of the state is the center of gravity of its power relationships. Since the paramount aim of the state is to preserve and to extend its means, the monarch has the responsibility for taking such action as will maintain and expand the available resources and make the subjects happy. It is with this objective that the science of police is concerned, namely, the maintenance and increase of the wealth of the state through appropriate institutional organization, for instance, through improved cultivation of the land, aiding the laboring class, and maintenance of order in the community.

Problems of health and disease are considered in connection with the aim of augmenting the population. Justi's treatment of the matter in his *Grundsätze der Policey-Wissenschaft* occurs in the chapter entitled "On the internal cultivation of countries or the increase of population." Among the measures proposed to promote this aim, he urges that people with hereditary diseases or who are unable to procreate should not be permitted to marry; that vice should be treated severely since it diminishes fecundity and discourages marriage; and that dissipation and disease should be prevented when at all possible. Specifically, through improved sanitary administration the government should try to lengthen the life of the people.[85]

The same problem is discussed by Justi in his *Staatwirthschaft*, where the military focus of interest is specifically brought to bear on the matter. Before engaging in war, he argues, a wise monarch will give serious attention to his population, that is, to his human resources. Through his administrative apparatus the monarch will do all he can to diminish sickness among his subjects and prevent the outbreak of contagious diseases. In relation to this aim, medicine must be improved and encouraged by the government. The same is true of surgery, midwifery, and pharmacy.

[84] State Management; a systematic treatise on all the economic and cameral sciences necessary for the government of a country, 1755; Fundamentals of Police Science, 1756.

[85] J. H. G. von Justi: *Grundsätze der Policey-Wissenschaft*, Göttingen, 1756, pp. 64-76.

To avoid quackery and abuse, the exercise of these arts must be regulated by the authorities. Provision must also be made for pure food and water. Environmental hygiene must be assured, and to accomplish this in towns and cities, building regulations must be instituted.[36]

In passing from Justi to Sonnenfels, there is a definite feeling of having passed from one intellectual climate to another. While Sonnenfels stood squarely on cameralist ground, adhering to the idea of enlightened absolutism, he also reflected the contemporary humanitarian demand for social justice as well as the enlightenment of the French *philosophes*. Illustrative of his position at the conflux of these trends is the circumstance that in his chief work, *Grundsätze der Polizey, Handlung, und Finanz*, the center of the titlepage in each of its three volumes is occupied by a vignette; that in the first volume portrays Montesquieu,[37] the second Forbonnais,[38] and the third Sully.[39] Similarly, the motto of the first volume in the fifth edition is from Cicero, the second takes its motto from Rousseau, the third from Horace.

Joseph von Sonnenfels (1732-1817) studied law at the University of Vienna and, in 1763, was appointed professor of cameral science.[40] As advisor to Maria Theresa, Joseph II, and Leopold II, he played an influential rôle in shaping Austrian political, social, and economic policy. His views were widely accepted, in large measure through his popular textbook, *Grundsätze der Polizey, Handlung, und Finanz* (first edition, 2 vols., 1765).

Like his predecessors and contemporaries, Sonnenfels considered a large population to be of central significance for the economy of a country. To accomplish this purpose the state should use all the means in its power to encourage fecundity and to preserve life. In this connection for instance, Sonnenfels recommended the establishment of maternity hospitals and foundling asylums. In the light of this approach, he defined the science of police as the science of founding and maintaining the internal security of the state. For our purpose Chapter V, "On the Security of the Person,"

[36] J. H. G. von Justi. *Staatswirthschaft* . . . (2nd edition), Leipzig, 1758, vol. I, pp. 173-176.

[37] Charles de Secondat, Baron de la Brède et de Montesquieu (1689-1755), French political theorist, best known for his *De l'ésprit des lois*, 2 vols., 1748.

[38] François Véron Duverger de Forbonnais (1722-1800), French economist and a leading representative of mercantilism in the eighteenth century.

[39] Maximilien de Béthune, Duc de Sully (1560-1641), French statesman under Henri IV. His principal work was concerned with financial administration, and contributed to the consolidation of the power of the French monarchy.

[40] Small, *op. cit.*, pp. 481-524.

is of the greatest interest in this connection. This chapter discusses in detail a large number of activities and topics that affect public welfare and the health of the subjects. Among these are crimes of violence, poor relief, care of the sick, prevention of epidemics, regulation of medical and surgical practice, securing of pure food, cleanliness of cities, methods of procuring abortions, and duelling.

Clearly, by the third quarter of the eighteenth century there had come into being in the German states a system of administrative thought and behavior which referred all activities to the welfare of the absolute state as the norm. This was the science of police. Taking very practical conditions of security as a point of departure, the theoreticians and practitioners of *Polizeiwissenschaft* evolved a body of ideas and practices designed to be used by statesmen in the pursuit of clearly specified political objectives. This concept of public administration also encompassed problems of health and welfare, accepting these as the responsibility of the state.

This political and administrative line of development was paralleled by an equally significant growth of interest among medical men in the relations of health problems to society and in particular to the state. Beginnings of this trend are already present in the early seventeenth century. Among the physicians who concerned themselves with the relations of government to health, the Tyrolean Hippolyt Guarinonius (1571-1654) deserves attention.[41] Descended from a Milanese family that had settled in Trent, he studied medicine at Padua, and later became physician to a home for women at Hall in the Tyrol. There he wrote his work on hygiene of which the first part was published, in 1610, at Ingolstadt under the title *Greuel der Verwüstung menschlichen Geschlechts.*[42] A continuation of this work, prepared over forty years later, is extant only in manuscript. Guarinonius was a devout Catholic and his book is imbued with religious ideas, a circumstance which finds most explicit expression in the close connection between hygiene and morals. Various problems of personal and public hygiene are discussed, abuses are indicated, and improvements are proposed.

In the first part of his "little book," as he called it, of 1350 folio pages, Guarinonius treated such general questions as the average duration of life, the relation between body and mind, and so on. He then proceeds to discuss housing and dwelling hygiene, food control, the use and abuse

[41] Fischer, *op. cit.*, vol. 1, pp. 282-292.

[42] The Abomination of the Devastation of the Human Race.

of alcoholic beverages, the hygiene of procreation, the protection of the health and welfare of children, school hygiene, problems of hospital supervision, and finally the problem of medical care with particular attention to quackery and malpractice.

His approach to some of these problems may be indicated briefly. In questions of housing hygiene, Guarinonius advocated various views already intimated by Hippocrates. Thus, he emphasized that settlements located on high land were more salubrious than those in the plains because people lived longer there. He recommends that in the low-lying plains, the houses should be built high, and that the streets and squares should be wide to provide for good ventilation. The problem of ventilation occupies Guarinonus also in discussing school and hospital hygiene. The air in the living rooms was bad because the rooms were small and overheated in winter. Furthermore, the atmosphere in the houses was poisoned by the unsuitable installation and poor functioning of toilets. In a like manner, school rooms are unhealthy because, due to laziness or in order to save firewood, windows are never opened and no care is taken to provide ventilation. Also, the janitors are too lazy to clean the rooms thoroughly.

These statements characterize only a small part of the contents of this book which, with censure and admonition, explanations and demands, deals with the entire field of public health as it was understood at the time. Guarinonius insists on the need for governmental action to improve health conditions and cites with approval the Augsburg police ordinance of 1530, entitled *Reformation guter Policey zu Augsperg Anno 1530*. His position is succinctly put in his demand for a "Christian police."

Another early contribution to the development of thought on governmental responsibility for the health of the community is the *Politia medica* of Ludwig von Hörnigk (1600-1667), municipal physician at Frankfurt a. Main.[48] Published in 1638, this work is noteworthy on several grounds. First, the exceedingly lengthy title presents almost a table of contents. The title reads as follows:

> Medical Polity, or a Description of the Physicians, both the ordinary ones as well as the appointed Court, Municipal, Military, Hospital and Plague Physicians, Apothecaries, Druggists, Surgeons, Oculists, Hernia and Stone Operators, Confectionery Bakers, Shopkeepers and Bathmen,

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[48] Ludwig von Hörnigk: *Politia Medica oder Beschreibung dessen was die Medici . . . zuthun und was auch wie sie in Obacht zu nehmen . . .* Franckfurt am Mayn, Bey Clemens Schleichen, 1638; Fischer, *op. cit.*, vol 1, pp. 325-327.

Also of the women appointed to supervise midwives, midwives, lesser female attendants and nurses,

As well as all kinds of unauthorized fraudulent and impudent healers such as old women, cutpurses, crystal gazers, hedge parsons, hermits, jugglers, urine prophets, Jews, calf doctors, tramps, charlatans, informers, fanatics, pseudo-Paracelists, quacks, rat catchers, charmers, exorcists, sorcerers, gypsies, etc.

And then finally the patients or the sick themselves

What these have to do and how they are to be supervised

For the particular use and advantage of all Lords, Courts, Republics and Communities

Collected from the Holy Scriptures, Canon and Secular Law, Police Ordinances and many reliable works by Dr. Ludwig von Hörnigk. . . .

From this summary, which gives the flavor of the book, it is evident that Hörnigk touches on numerous aspects of health and disease that have social implications. Especially noteworthy in this connection are the first two words of his title, *Politia medica*, which may be translated as medical police. Furthermore, his exposition is based on a number of medical ordinances and regulations, particularly those of the cities Frankfurt and Worms, and of the state of Hessen-Kassel. In fact, he chose to present his book in the form of a medical ordinance, to which he added his discussion in the guise of a commentary. Hörnigk's book is not original in its views, but it does emphasize that health is a community problem and that it is up to the constituted authorities to act when necessary to preserve it.

Governmental supervision of public health was also advocated at the end of the seventeenth century by Conrad Berthold Behrens (1660-1736), a physician of Hildesheim. His book, *Medicus legalis oder Gesetzmässige Bestell—und Ausübung der Artzney-Kunst*,[44] published at Helmstedt in 1696, does not deal with legal medicine as one might suspect from the title, but rather with matters of community health. Based on the premise that governmental authorities are obligated by the law of nature to care for the health of their subjects, Behrens argues that such provision must rest on two major forms of action, prevention of disease, and its treatment when it occurs.[45] Prevention must concern itself with the constitution of the air and with nutrition. Behrens also deals with the subject of infection and other matters of public health interest.

Attention to the obligations of the state in matters of health and disease expanded still further in the eighteenth century. This is clearly indicated by the circumstance that a number of medical students wrote dis-

[44] Fischer, *op. cit.*, vol. I, p. 327.

[45] The Legal Physician, or the legal organization and practice of the art of medicine.

sertations on the subject. One of the earliest by Elias Friedrich Heister is entitled *De principum cura circa sanitatem subditorum* (On the care of the ruler for the health of the subjects). Published in 1738 at Helmstedt, this essay treats of various measures that a prince ought to take to maintain the health of his people. Among the subjects considered are nutrition, abuse of alcoholic beverages, and contagious diseases. Heister's essay does not refer to any of the earlier writers on the subject, nor does it exhibit any original features, but it does show that matters of public health were already being discussed at universities.

Dissertations on related subjects were also presented at other German universities. In 1753, J. G. Sonnenkalb graduated at Leipzig with a dissertation on hindrances to public health.[46] The topics with which he dealt comprised impure air, poor hospital conditions, inexperienced midwifery, brothels, and frauds and abuses in the sale of food. The ruler's concern in preserving the health of his subjects is the subject of a dissertation with which A. C. Hammer graduated at Marburg in 1768.[47] Finally, attention may be called to two dissertations published at Leipzig in 1771, both dealing with the removal of obstacles to public health.[48] These writings do not contain anything original, but they show that teachers at the universities were imparting to their students an interest in problems of public health. This is very clear in the case of the Leipzig dissertations which were all written under the influence of Anton Wilhelm Plaz (1708-1784) who was professor from 1733 till his death and, for the last ten years of his life, was Dean of the Faculty of Medicine. Among his writings is also a *Dissertatio de removendis sanitatis publicae impedimentis*, Leipzig, 1771.

Interest in health as a question of public policy entered upon a new stage of development during the second half of the century through the creation of the concept of *medical police*. Influenced by the doctrines of the political philosophers and the theoreticians of police science, physicians adopted the police concept and began to apply it to medical and health problems. As far as is known, the term medical police was first employed in 1764 by Wolfgang Thomas Rau (1721-1772) in his book *Gedanken von dem Nutzen und der Nothwendigkeit einer medicinischen Policeyordnung in einem Staat*.[49] Rau was for a time municipal physician in his

[46] J. G. Sonnenkalb: *De sanitatis publicae obstaculis*, Leipzig, 1753.

[47] A. C. Hemmer: *De principum ratione subditorum conservandi sanitatem*, Marburg, 1768.

[48] J. G. Arnold: *De removendis sanitatis publicae impedimentis*, Leipzig, 1771; Christian Liebing: *De amoliendis sanitatis publicae impedimentis*, Leipzig, 1771.

[49] Thoughts on the utility and necessity of a medical police ordinance for a state.

native city of Ulm and occupied similar posts in other communities.[50] Basing his argument on the political theory of Wolff, he went on to point out that every monarch needs healthy subjects who will be able to fulfill their obligations in peace and war. For this reason, the state must care for the health of the people. The medical profession is obligated not only to treat the sick, but also to supervise the health of the population. But the value of these activities on the part of the medical profession is in large measure cancelled out by the obnoxious and nefarious acts of charlatans and quacks. As Rau put it, the misuse of medicine by untrained persons is as harmful as the discovery of gunpowder. In order to have competent medical personnel, it is necessary to enact a medical police ordinance which will regulate medical education, supervise apothecary shops and hospitals, prevent epidemics, combat quackery, and make possible the enlightenment of the public. Rau was quite aware of the difficulties that such a program would encounter, especially in the matter of public health education. Concerning this problem, he remarked that the mass of the people could not be reached through books since "no one reads anything." He did propose, however, to use the almanacs which were very popular to spread useful precepts on diet and the maintenance of health, on the care of pregnant women, nursing mothers, and women in childbed, on the care of children, and protecton aganst endemic or epidemic disease. All these considerations clearly indicated the need for a medical police code. Rau's small book (44 octavo pages) passed through several editions and received considerable attention.

The idea of medical police, that is, the creation of a medical policy by government and its implementation through administrative regulation, rapidly achieved popularity. The influence of Rau's book is evident in the work issued in 1771 by Christian Rickmann, professor at Jena.[51] Entitled *Von dem Einfluss der Arzneiwissenschaft auf das Wohl des Staats und dem besten Mittel zur Rettung des Lebens.*[52] Rickmann's book made a strong and demonstrable impression upon his contemporaries. Based on the writings of Sonnenfels and Rau, he also advocated the creation of a code of medical police, and urged the need for a physician to compile a complete treatise on medical police. Such a work would have to show how to care for the health of the people through improvement or removal of many conditions harmful to the community, furthermore

[50] Fischer, *op. cit.*, vol. 2, pp. 14, 39, 122-123.
[51] *Ibid.*, pp. 14, 39, 123.
[52] The influence of medicine on the welfare of the state and the best means for saving lives.

how the sick and the infirm may obtain the assistance they need, and how to combat and control epidemics. Rickmann also dealt vigorously with the problem of quackery, and suggested a number of reforms. Of considerable interest is his plan for a sickness insurance scheme.

Another noteworthy point is his division of diseases into two major groups based on causation. The one he calls *natural*; it includes particularly the contagious and epidemic diseases. The second group Rickmann terms *man-made*. These diseases occur more frequently than those in the first group and are "simply the physical consequences of moral laxity." Among the *man-made* diseases, he distinguishes between those due to the patient's own derelictions and those caused by the transgressions of others. These distinctions are significant because they present in a crude and undeveloped manner an early formulation of the concept of disease as a product of social and cultural maladjustment, a view which was developed more fully and concretely in the nineteenth century.

Other physicians also turned their attention to various problems of medical police during this period. In 1773, J. F. Zückert (1737-1778), a Berlin physician, published a book on the best means to prevent the depopulation of a country when epidemics prevail.[53] He attributed the origin of epidemics to meteorological conditions as well as to the effects of such elements as famine, fear, and other misfortunes that result from poor harvests, earthquakes, wars, and sieges.[54] Nevertheless, Zückert felt that an epidemic could be nipped in the bud, given a sufficient number of hospitals and the necessary medical police ordinances. Indeed, through good medical police organization it may even be possible to prevent the spread of an epidemic to a neighboring state. Zückert also called attention to the need for popular enlightenment in health matters, but he was aware that the common people were often apathetic to their own best interests. They must therefore be regarded as children in whose interest and for whose welfare the necessary measures must be taken. When affected by contagious diseases, they must be isolated and supplied with food and medical attention.

Two years later, Ernst Gottfried Baldinger (1738-1804), professor of medicine at Göttingen (1773-83), one of the best known physicians of his time, began to issue his journal, the *Magazin vor Ärzte*.[55] In the preface he announced that the periodical would devote itself preeminently

[53] Joh. Friedrich Zückert: *Von den wahren Mitteln, die Entvölkerung eines Landes in epidemischen Zeiten zu verhüten*, Berlin, 1773.

[54] Fischer, *op. cit.*, vol. 2, pp. 123, 136. [55] *Ibid.*, pp. 39-40.

to questions of medical police. Later, in 1782, Baldinger issued one of his official addresses under the title *Über Medicinal-Verfassung*. In it he emphasized that medicine was in considerable measure a political science (*Staatswissenschaft*), and that the best medical legislation would remain ineffective unless physicians were well-trained and the people enlightened.

The increasing concentration of interest in problems of medical police at this time is further evidenced by the appearance in rapid succession of several other significant works, each contributing to the subject in its own way.[56] In 1777 there appeared the *Fundamenta politiae medicae*[57] by J. W. Baumer (1719-1788). Although this book dealt at length with public health matters, it also included legal medicine and veterinary medicine, indicating that these fields were still incompletely differentiated. It is worth noting that Baumer employed the works of Wolff and Justi in his book. More important was the publication at Düsseldorf, in 1778, of the *Patriotische Vorschläge zur Verbesserung der Medicinalanstalten . . .*[58] by J. P. Brinkman (1746-1785). After practicing at Cleves and Düsseldorf for many years, Brinkmann went to Russia, in 1784, as personal physician to two grand dukes, but died soon after.[59] Throughout his career, he was concerned with problems of public health and welfare. In his book, Brinkman offers suggestions to improve the health of the rural population, with particular attention to the quality of surgery and midwifery. Like Rickmann, to whom, however, he does not refer, Brinkmann distinguishes diseases that are natural and therefore unavoidable, and those that are man made. In order to increase the security of the state, government should endeavor to prevent misery, disease, and death. Mortality can be decreased through appropriate medical police measures in various areas of public health. All causes that prevent the population from obtaining the means of existence must be removed through public action. Likewise, the moral behavior of the people must be regulated by law so that dissipation will not sap their vital energies. Medical care must be provided and epidemics controlled. Throughout his book, Brinkmann frequently made use of the term medical police.

IV

Having surveyed the origin and development of the concept of medical police up to the last quarter of the eighteenth century, let us assess the

[56] *Ibid.*, pp. 40-41, 124.
[57] Foundations of medical police.
[58] Patriotic proposals for the improvement of medical institutions.
[59] Karl Sudhoff: *Joh. Peter Brinkmann, ein niederrheinischer Arzt im 18. Jahrhundert*, Düsseldorf, 1902.

significance of this process. For this purpose, medical police is the concept referable to those theories, policies, and practices arising from the political and social basis of the absolute, mercantilist German state during the seventeenth and eighteenth centuries for action in the sphere of health and welfare, so as to secure for the monarch and the state increased power and wealth. To some, such a view may perhaps be oversimplified, but it is certainly more realistic and historical than a position which regards the idea of medical police *in vacuo*, and as a result tends to overemphasize the proximity of its outstanding exponents, such as Johann Peter Frank, to modern views on public health and the social problems of health and welfare. The development and exploration of the concept of medical police was a pioneer endeavor in the systematic analysis of the health problems of community life. This trend culminated in the outstanding work of Johann Peter Frank and Franz Anton Mai, which are thus seen as products of an ongoing social process operating in a particular political, economic, and social system. Upon this basis, it becomes possible to assess more clearly the significance of the work of Frank and other German writers of the later eighteenth and early nineteenth centuries, and to understand better why the impact of these ideas on practice was limited.

THE WILLIAM OSLER MEDAL ESSAY

A SHORT HISTORY OF THE PROFESSORSHIP OF CHEMISTRY OF THE UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE 1765–1847

WITH AN ACCOUNT OF THE CONTROVERSY OVER THE CHAIR, 1809-1818

HERBERT S. KLICKSTEIN

The institution which now is known as the University of Pennsylvania had been in existence for nearly sixteen years, first as an Academy and afterwards as a College, before a plan for medical instruction was incorporated into its curriculum.[1] This event took place on May 3, 1765 when a general plan for a medical school was approved and the first medical professor appointed. The College of Philadelphia is to be credited because of this action with the establishment of the first school of medicine in what was to be the United States. The idea of founding a medical school in Philadelphia was first conceived by two Philadelphians, John Morgan [2] and William Shippen,[3] while they were students of medicine in Edinburgh. Shippen returned to Philadelphia (1762) before Morgan, where he began to lecture on anatomy, a course he repeated for three suc-

[1] The following sources were used in part for the background material concerning the early history of the University of Pennsylvania School of Medicine (College of Philadelphia, University of the State of Pennsylvania): *Catalogue of the medical graduates of the University of Pennsylvania; with an historical sketch of the origin, process, and present state of the medical department*, Philadelphia, 1839; J. Carson, *A history of the medical department of the University of Pennsylvania . . .*, Philadelphia, 1869; G. W. Norris, *The early history of medicine in Philadelphia*, Philadelphia, 1886; F. R. Packard, *History of medicine in the United States*, New York, 1931, 2 vols.; E. P. Cheyney, *History of the University of Pennsylvania 1740-1940*, Philadelphia, 1940; W. F. Norwood, *Medical education in the United States before the Civil War*, Philadelphia, 1944.

[2] For critical discussion of Morgan with biographical references, see W. J. Bell, *Bull. Hist. Med.*, *22*, 543-561 (1948).

[3] B. C. Corner has edited Shippen's student diary, London, 1759-1760 in *William Shippen, Jr., pioneer in American medical education*, Philadelphia, 1951. Shippen was destined to become Morgan's bitter antagonist in a controversy over the control of medical services during the American Revolution. J. E. Kieffer has summed it up in *Bull. Hist. Med.*, *11*, 148-160 (1942).

cessive years.[4] He abstained, however, from going ahead with the plan for a medical school until Morgan returned from Europe. Morgan had in the meantime formulated a more detailed project for establishing a medical department at the College of Philadelphia. He sought out and secured the support of a number of influential individuals who were impressed with his opinions and recommendations. They advised the Trustees of the College to establish the medical department, suggesting further that Morgan be appointed to its faculty. The plan submitted by Morgan met with the unanimous approval of the Trustees who immediately voted him the professorship of the theory and practice of physic, the chair he desired. At the College Commencement of 1765, Morgan delivered his now classic *Discourse upon the Institution of Medical Schools in America*, which was soon published.[5] On September 23, 1765, Shippen was appointed professor of anatomy and surgery. The other two principal chairs, namely those of materia medica, and chemistry, were left unfilled, however, for a time, since the persons who were favorably looked on as their ultimate occupants were still studying in Europe (Adam Kuhn and Benjamin Rush).

The first session of the medical school (1765-1766) offered some instruction in chemistry, despite the unfilled professorship. This is evident from the announcement of the lectures of the first session which was issued jointly by Morgan and Shippen: "We intend to introduce into them, as much of the Theory and Practice of Physic, of Pharmacy, Chemistry and Surgery, as can conveniently be admitted."[6] Morgan, in a separate announcement of his "Course of Lectures on the Materia Medica," states that "some instructive Lessons upon pharmaceutic Chemistry" would be given and that "this will open to Students a general Idea both of Chemistry and Pharmacy."[6] It seems certain then that John Morgan taught chemistry to the students in medicine as early as the first session in 1765.[7]

[4] Krumbhaar, E. B., *Annals of Medical History*, *4*, 271-286 (1922).

[5] *A discourse upon the institution of medical schools in America; delivered at a public anniversary commencement held in the College of Philadelphia May 30 and 31, 1765 . . .*, Philadelphia, 1765. Facsimile edition with introduction by A. Flexner made in Baltimore, 1937. It is noteworthy that Benjamin Rush's copy of the *Discourse* is in the Rare Book Collection of the University of Pennsylvania Library. Another copy bearing the inscription "for Dr. Cullen Professor of Chymistry at Edinburgh from the Author" is in the library of the University of Pennsylvania School of Medicine.

[6] *Pennsylvania Gazette*, No. 1918, 1 (September 26, 1765).

[7] Hepburn, J. S., *J. Chem. Education*, *9*, 1577-1591 (1932); *The General Magazine and Historical Chronicle*, *35*, 491-510 (1933).

Morgan was qualified to teach chemistry for he was indoctrinated into the science on his continental tour as well as during his early studies in Philadelphia. William Smith, Provost of the College of Philadelphia, was his first teacher in chemistry. Hepburn [7] has conclusively shown that Smith taught a course in natural philosophy which included chemistry to the students of the College as early as 1756. Since Morgan graduated in 1757 as a member of the first class to receive degrees in arts, it is probable that he took Smith's course which was required. The course given by Smith extended over a four-month period during the last term of the third or senior year with apparently a lecture each day. An estimate of Smith's views of natural history, which encompassed chemistry, can be had from his, *A General Idea of the College of Mirania* which first appeared in 1751 and a "Plan of Education" which was one of the forerunners of the *Account of the College, Academy and Charitable School of Philadelphia in Pennsylvania.*[8] An undated manuscript notebook on chemistry, in the hand of William Smith,[9] although fragmentary provides additional evidence of the chemistry that Morgan received at the College. It seems certain, judging from these sources, that Smith ensured his students a fundamental knowledge of the chemistry of his time. It is of interest to note that Smith utilized Peter Shaw's translation of Boerhaave's *Elementa Chemiae* in his course and recommended its study by the students.[10]

After graduating from the College, Morgan served for thirteen months as resident apothecary to the Pennsylvania Hospital under John Redman. Redman was a graduate of Leiden, having studied there in 1747 and 1748, which was after Boerhaave's death (1738). But Boerhaave's teach-

[8] For bibliographical details of Smith's works see T. R. Adams, *Trial check list of the writings of William Smith first Provost of the University of Pennsylvania,* Philadelphia, 1950. The "Plan of Education" first appeared in the *Pennsylvania Gazette,* No. 1442, 1-2 (August 12, 1756). The *Account of the College, Academy and Charitable School of Philadelphia,* has recently been reprinted with a commentary by T. Woody and edited by T. R. Adams, Philadelphia, 1951.

[9] Ms. of 25 leaves, numbered 2-26, Edgar Fahs Smith Collection, University of Pennsylvania. Handwriting compared with Petition in Smith's hand to the House of Representatives of the General Assembly of Pennsylvania (February 6, 1758) shows them to be the same.

[10] Smith refers to *Shaw's* Boerhaave in the "Plan of Education" (see note 8) and in the Ms. of his lectures (see note 9). There were a number of editions of this translation, appearing under the title, *A new method of chemistry; including the theory and practice of that art,* translated by P. Shaw and E. Chambers, London, 1727, 2 vols.; 2nd ed., London, 1741, 2 vols.; 3rd ed., London, 1753, 2 vols. For interesting bibliographical details see: T. L. Davis, *Isis, 10,* 33-46 (1928); M. Hertzberger, *Short-title catalogue of books written and edited by Herman Boerhaave,* Amsterdam, 1927.

ings were still dominant at Leiden and Redman, no doubt, brought back many of his doctrines. They may well have influenced Morgan. After a short service as surgeon to the Pennsylvania troops in the French and Indian War, Morgan at the age of twenty-five went to Europe to complete his medical education, a common practice in his day.[11] He first went to London where he studied with the Hunters, then to Edinburgh and, finally, he made a tour of France and Italy before returning to Philadelphia.[12]

It was in Edinburgh that John Morgan received his most complete lectures in chemistry. Here he took William Cullen's course in chemistry twice; the list in Cullen's class book of " Students in the College of Chemistry " lists him for 1761-1762 and 1762-1763.[13] Cullen was an excellent chemist who appreciated the importance of chemistry to medicine. The text used by Cullen was that of Boerhaave. The course was well rounded and presented the chemistry of the period in a critical yet comprehensive manner.[14] Boerhaave's text is no surprise, for the medical faculty at Edinburgh was a direct extension from Leiden; James Crawford in physic and chemistry, Alexander Monro in anatomy and surgery, Andrew Plummer in chemistry and medicine, and Charles Aston in botany. Cullen was a student of Plummer whom he succeeded in 1755. Morgan then was exposed to the Leiden tradition in both America and Europe.[15]

The training that Morgan received in chemistry was well oriented in its relationship to medicine, the direct influence no doubt of his Edinburgh studies. Morgan expresses his views on the importance and place of chemistry in the medical curriculum in the course of his *Discourse*. He states that the " various branches of knowledge which compose the sci-

[11] A full study of this subject can be had in the following: J. Gordon Wilson, Institute of Medicine of Chicago, *Proceedings*, *7*, 129-138 (1929); F. R. Packard, *Annals of Medical History*, *4*, 219-244 (1932); W. J. Bell, *Penn. Mag. of Hist. and Biog.*, *67*, 1-29 (1943); M. Kraus, *The Atlantic civilization: eighteenth-century origins*, New York, 1949, pp. 192-215.

[12] A. Pace has reviewed all the Ms. material of Morgan's Italian visit in *Bull. Hist. Med.*, *18*, 445-453 (1945).

[13] Bell, W. J., *Proc. Am. Phil. Soc.*, *94*, 275-281 (1950).

[14] The following sources contain data on Cullen's chemical teachings: J. Thomson, *An account of the life, lectures, and writings of William Cullen, M. D.*, Edinburgh, 1832-1859, 2 vols.; M. E. Kapp, *J. Chem. Education*, *18*, 553-559 (1941); J. E. Mackenzie, *J. Chem. Education*, *12*, 503-511 (1935); L. Dobbin, *Annals of Science*, *1*, 138-156 (1936); A. Kent, pp. 15-27, and D. Guthrie, pp. 49-65, in *An eighteenth century lectureship in chemistry*, edited by A. Kent, Glasgow, 1950.

[15] See H. E. Sigerist, *Nederl. Tijdschrift voor Geneeskunde*, *82*, 4, 4822-4828 (1938); J. D. Comrie, *ibid.*, *82*, 4, 4828-4835 (1938); A. Clow, in A. Kent, *op. cit.*, pp. 41-48.

ence of medicine, are Anatomy, Materia Medica, Botany, Chemistry, the Theory of medicine, and the practice." [16] In a later portion of the *Discourse* he enlarges on "Chymistry." [17]

> Chymistry is either Philosophic, or Pharmaceutic. The former considers the particular properties of bodies, and explains their effects. It is distinguished from natural philosophy, as this latter is only conversant about the general properties of bodies.
>
> Pharmaceutic Chymistry, is that branch of philosophic Chymistry, which regards the particular properties of such bodies as are appropriated to medicine. It considers their virtues in a simple state, or those which they acquire by combination, and in this has a close connection with the Materia Medica.

Morgan then discusses "Pharmaceutic Chymistry" at length, stressing the point that, "whatever skill we may boast in investigating the nature of a disease or in understanding the structure of the body, yet without a knowledge of the instruments which are to be used, and of their properties and action upon the body, whereby they produce a change from sickness to health, other knowledge avails little in the cure of diseases." [17a] The place of chemistry in Morgan's medical curriculum is put forth as follows: [18]

> Medical Science is one whole of which all the branches I have enumerated are the several parts. They may be considered as the links of a chain that have a mutual connection with one another. Anatomy, Materia Medica, Botany, Chymistry, and the Institutions, are only the ladder by which we are to mount up to practice. . . .

In the *Discourse*, Morgan, among other things, recommends the sequence in which the subjects should be studied.[19] He discusses the background of the Edinburgh school [20] and he states that he will present a course on Materia Medica which will give "a general idea of Chymistry." [21]

There is still in existence a set of student notes of Morgan's course in chemistry, unfortunately the only direct documentation of what he taught his classes. These are in the library of the College of Physicians of Philadelphia as a bound manuscript entitled "A Compendium of Chemistry; Historical, Theoretical and Practical . . . ," [22] The notes were taken

[16] *Discourse*, p. 5.
[17] *Ibid.*, pp. 10-11.
[17a] *Ibid.*, p. 11.
[18] *Ibid.*, pp. 14.
[19] *Ibid.*, pp. 16.
[20] *Ibid.*, pp. 28-29.
[21] *Ibid.*, pp. 35-36.
[22] Ms., 227 pages, 225 numbered, library of College of Physicians, Philadelphia. Title page reads in full as follows, "A Compendium of Chemistry; Historical, Theoretical and Practical. Being the substance of a Course of Chemical Lectures; Delivered by John Morgan, Professor of Medicine in Philadelphia in the year 1766. John Hodge."

by John Hodge [23] during the second session of the medical school. The course, judging from the notebook, was divided into three major sections: the history of chemistry, the theory of chemistry, and the descriptive matter of chemistry. Cullen's classification is adopted for "arranging all chemical bodies." The presentation throughout is broad in its scope and reflects very strongly the ideas of Edinburgh. Hepburn [24] has analyzed the manuscript in some detail.

The announcement of Morgan's course of lectures on the theory and practice of physic, to be given during the second session of the medical school,[25] states that a preparatory course would be given in "Chymistry"; the course that Hodge's notes were based on. On May 12, 1767, the Trustees approved and later published with the notice of the third session (1767-1768) the requirements for the degree of Bachelor of Physic.[26] It was required that "each Student shall take at least one Course in Anatomy, Materia Medica, Chemistry, Theory and Practice of Physic, and Clynical Lectures, and shall attend the Practice of the *Pennsylvania Hospital* for one year; . . . ,". Included in the same announcement was the information that a course in chemistry would precede the lectures on the Theory and Practice of Medicine. The account of the first commencement of the medical school held on June 21, 1768, indicates that the graduating students had proven their proficiency in chemistry "both in their private and public Examinations." [27] The announcement of the fourth session (1768-1769) of the medical school states definitely that "Dr. Morgan's Course of Lectures on Chemistry, and on the Theory and Practice of Medicine, will be begun on Monday, the Thirty-first Instant, at Three o'clock in the Afternoon." [28] Additional evidence that Morgan taught chemistry during the early sessions of the medical school is found in the tickets of admission to his lectures.[29] "The evidence then is conclusive that John Morgan was the first teacher of chemistry in the oldest American medical school; that he taught chemistry to its students during the first four years of the existence of this school; and that, during this period, chemistry was a required subject, and candidates for degrees in medicine passed examinations in chemistry as a prerequisite to graduation." [30]

[23] John Hodge entered the medical school in 1766, and graduated with the degree of Bachelor of Medicine in 1769.

[24] See above, footnote 7.

[25] *Pennsylvania Gazette*, No. 1970, 3 (September 25, 1766).

[26] *Ibid.*, No. 2014, 2 (July 30, 1767).

[27] *Ibid.*, No. 2062, 1 (June 30, 1768).

[28] *Ibid.*, No. 2077, 3 (October 3, 1768).

[29] See above, footnote 7.

Although Morgan lectured on chemistry for the first four years of the medical school of the College of Philadelphia, he did not at any time hold an official appointment to the chair of chemistry. The first actual occupant of the chair of chemistry was Benjamin Rush, who was destined to teach chemistry in that capacity for twenty years.[30] Rush, while an apprentice to John Redman for five years, attended the lectures of Morgan and Shippen at the College—" the former on anatomy in 1762 and 1765, and of the latter on material medica in the last of those years." [31] As already shown, the lecture on materia medica given by Morgan in 1765 devoted some time to chemistry. That Rush was influenced by Morgan to consider the chair of chemistry is apparent from an entry in his *Autobiography*: [32] " for this appointment (Professor of Chemistry) I was indebted to the early friendship of Dr. Jno. Morgan, who first advised me to qualify myself for it before I went to Edinburgh in 1766." There was apparently an understanding between Morgan and Rush as to the chair in chemistry before the latter's departure to Edinburgh in 1766, where he was to complete his medical education.[33] Morgan provided Rush with a letter of introduction to Cullen who was most cordial in his reception.[34] On his arrival in Edinburgh on November 1, 1766, Rush obtained tickets of admission to the different lectures, among them chemistry, which was now given by Joseph Black, who had followed Cullen to the chair.[35] Morgan had suggested the courses to Rush before he left Philadelphia.[36] Rush spent a good deal of his time with chemistry during his first year in Edinburgh. In a letter dated April 30, 1767, he wrote: [37]

> I have employed chief of this winter in prosecuting my favorite study, *chemistry*. I know of no science in the world which affords more rational entertainment than this. It is not only a science of importance in itself, but serves as a key to a thousand other sources of knowledge. . . .

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[30] Material on Rush is derived from the two following sources: L. H. Butterfield (Editor) *Letters of Benjamin Rush*, 2 vols., vol. 1: 1761-1792, vol. 2: 1793-1813, Princeton, 1951, to be referred to as *Letters*; G. W. Corner (Editor), *The Autobiography of Benjamin Rush. His "Travels Through Life" together with his Commonplace Book for 1789-1813*, Princeton, 1948, to be referred to as *Autobiography*.

[31] *Autobiography*, p. 39.

[32] *Ibid.*, p. 81.

[33] Rush kept a journal of his journey; it is now in the possession of the Indiana University library. Portions were used in documenting the *Autobiography*.

[34] Letter from Benjamin Rush to John Morgan, Edinburgh, November 16, 1766, *Letters*, vol. 1, pp. 28-29.

[35] *Autobiography*, p. 42.

[36] See above, footnote 34.

[37] Letter from Benjamin Rush to Jonathan Bayard Smith, Edinburgh, April 30, 1767, *Letters*, vol. 1, pp. 38-45.

Rush was fortunate in having Joseph Black for chemistry since he was one of the most distinguished chemists of his day. Black studied chemistry under Cullen as a medical student and later succeeded him in the chair of chemistry at Edinburgh (1766). The chemical contributions of Black have been adequately discussed elsewhere.[38] Rush was well aware of Black's reputation when he went to Edinburgh. Black's lectures, although universally acclaimed, were not published until 1803, about four years after his death.[39] During Black's lifetime, however, many manuscript versions of his lectures were made by his students. These provide a more contemporary and, in some cases, more complete record of Black's presentations. The manuscript copies are invaluable in determining just what chemistry Rush got at Edinburgh,[40] since none of Rush's own student notebooks on chemistry have survived. It is sufficient to state that Rush obtained as good a background in chemistry at Edinburgh as could be had anywhere in this period.

From a letter to Morgan in January, 1768, it appears that Rush's assumption that he would get the chair of chemistry was not a foregone conclusion.[41] Apparently, John Redman acting as a trustee of the College had indicated that Morgan's promise was not enough. In a bitter outburst Rush states that, "I wrote to him (John Redman) about the professorship at the same time I wrote to you, and desired him to use his interest to secure it for me. It was the first favor I ever implored from him, and I am resolved it shall be the last." [42] Redman later wrote Rush

[38] Black's chemical work is best evaluated in the following: W. Ramsay, *Life and letters of Joseph Black*, London, 1918; M. Speter, in G. Bugge, *Das Buch der grossen Chemiker*, Berlin, 1929, vol. 1, pp. 240-252; J. Read, in A. Kent, *op. cit.*, pp. 78-98; J. A. Cranson, in A. Kent, *op. cit.*, pp. 99-106.

[39] *Lectures on the elements of chemistry, delivered in the University of Edinburgh; by the late Joseph Black, M. D., now published from his manuscripts by John Robinson*, Edinburgh, 1803, 2 vols. First American edition, Philadelphia, 1806-1807, 3 vols.

[40] The manuscript versions listed below were examined in the course of the preparation of this paper: Ms., 118 lectures on chymistry (in various handwritings), 3 vols., c. 1775, in collection of Denis I. Duveen, New York; Ms., 118 lectures, 4 vols., taken by Caspar Wistar (?), 1784, library of College of Physicians, Philadelphia; Ms., 152 pp., Syllabus of course of lectures, 1792-1793, taken by Thom. C. James, library of College of Physicians, Philadelphia; Ms., 98 pp., taken by Thom. C. James, 1793, library of College of Physicians, Philadelphia; Ms. 3 vols., 1785 (?), library of New York Academy of Medicine. Descriptions of Black's chemistry lectures in: J. Read, ref. 38; D. McKie, *Annals of Science*, *1*, 101-110 (1936); J. Read, *Humour and humanism in chemistry*, London, 1947, pp. 162-166.

[41] Letter from Benjamin Rush to John Morgan, Edinburgh, January 20, 1768, *Letters*, vol. 1, pp. 49-52.

[42] *Ibid.*

that no formal election could be expected until he had fully qualified himself and presented satisfactory testimonials.[43] Rush, therefore, took steps in the Spring of 1769 to obtain the credentials requested. He obtained a letter from Thomas Penn (May 9, 1769) that included a strong recommendation by John Fothergill.[44] Rush continued to press his accomplishments on Morgan: "I think I am now master of the science (Chemistry) and could teach it with confidence and ease." [45] In the same letter he sets forth his concept of the relation of chemistry to medicine: "I should like to teach chemistry as a professor because I think I could show its application to medicine and philosophy in a stronger light than ever has yet been done." Again, on July 27, 1768, Rush writes Morgan at some length concerning his training in chemistry under Black.[46] By October, 1768, Rush must have had further assurance that he would be appointed to the chair since in a letter to Morgan he writes, "I am much obliged to you for continuing to read lectures upon chemistry. I hope to be in Philadelphia in May or June next, so that I shall relieve you from that task the ensuing winter." [47] He also feels that in his inaugural oration "something must be said in favor of the advantages of chemistry and its usefulness to medicine and philosophy. . . ."

On June 19, 1768, Rush was granted his "Degree of Doctor of Medicine." His dissertation, *De coctione ciborum in ventriculo*, was an attempt at a chemical explanation of digestion.[48] Shortly after his arrival in Philadelphia, Rush addressed his formal application to the Trustees of the College of Philadelphia for the professorship of chemistry (July 31, 1769).[49] He was unanimously elected on the following day. The announcement of the fifth session (1769-1770) of the medical school carried the formal declaration of his first course of lectures as professor of chemistry.[50]

Doctor Rush's introductory lecture, to his *Course* of *Chymistry*, will be delivered publikly, at the College, on Monday, the 30th Instant, at 3 o'clock in the Afternoon.

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[43] *Letters*, vol. 1, p. 51.

[44] *Ibid.*, vol. 1, p. 76.

[45] See above, footnote 41.

[46] Letter from Benjamin Rush to John Morgan, Edinburgh, July 27, 1768, *Letters*, vol. 1, pp. 61-63.

[47] Letter from Benjamin Rush to John Morgan, London, October 21, 1768, *Letters*, vol. 1, pp. 65-67.

[48] The dissertation was dedicated primarily to Benjamin Franklin, and secondarily to Joseph Black, John Redman, Shippen, Morgan, Jonathan Smith, and Jacob Rush. The order of the names irritated Morgan.

[49] *Letters*, vol. 1, pp. 75-76.

[50] *Pennsylvania Gazette*, No. 2130, 3 (October 13, 1769).

The course Rush gave his students in chemistry can be gauged from two primary sources, his printed works on chemistry and the student notes taken at his lectures. On assuming the chair, Rush prepared an outline of his course to assist his students. It was first published in 1770 as a *Syllabus of a Course of Lectures on Chemistry*.[51] This small tract of 48 pages is divided into two parts and an Appendix. Part I covers introductory comments, the history of chemistry, heat, evaporation, mixtures, solution, decomposition, chemical attraction, and apparatus. Part II is more extensive, encompassing the objects of chemistry, of elementary bodies, of elements or atoms, of mixts, and of the integrant. The objects of chemistry are divided into seven sections: salts, earths, inflammables, metals, waters, vegetables, and animal substances. The chemical history of animal substances is noteworthy because of its application to medicine. Here, Rush lectured on Solids (bones, skin, membranes), and Fluids (blood, gastric and sinovial (*sic*) juices, saliva, tears, sweat, insensible perspiration, urine, mucus, bile, wax, fatt (*sic*), marrow, milk, semen, nervous aether, faeces). The Appendix is a comprehensive "Pharmacy of Vegetables and Animals." It is obvious that Rush's course was an extensive coverage of chemistry with due regard to its medical aspects. Two other editions of the Syllabus are known to exist, an undated edition and a 1783 issue.[52] All versions of the *Syllabus* are fundamentally the same in textural content.

There are five different manuscript notebooks of Rush's lectures on chemistry available for study.[53] The earliest, which is in the library of the College of Physicians, Philadelphia, is in 2 volumes and contains a total of 26 lectures. It was taken in 1771 by F. Alison; the last lecture is dated July 3, 1771. The manuscript thus represents Rush's second course in chemistry. It is a valuable document since it covers such an early phase in Rush's career as professor of chemistry. The introductory lec-

[51] *Syllabus of a course of lectures on chemistry*, Philadelphia, 1770. This is an extremely rare publication, the only copy recorded is in the library of the University of Pennsylvania School of Medicine. See W. Miles, *Isis, 40,* 313-316 (1949), for bibliographical details of this and other editions of *Syllabus*.

[52] The undated edition, which is 40 pp., contains a folding "table of compound salts"; it is in the library of the University of Pennsylvania School of Medicine. The 1783 edition of 39 pages, also with a folding plate, is in the library of the American Philosophical Society, Philadelphia.

[53] The Alison Ms., 2 vols., is in the library of the College of Physicians, Philadelphia. Of the remaining 4 manuscripts, 3 are in the Rare Book collection of the University of Pennsylvania library, one dated 1783, the other 2 undated; the remaining Ms. is in the Edgar Fahs Smith Collection, University of Pennsylvania, an undated and most complete set of notes.

ture is particularly useful since it reflects the overall concepts of Rush, and it is a lecture not found in all the copies, the students merely noting that it was delivered. The other four notebooks were transcribed at later dates. They all follow the same general pattern as outlined in the *Syllabus*. Rush displays in the lectures his wide knowledge of chemistry. He also makes several appreciative references to Black and Cullen. The most striking feature of all the manuscript versions, both in content and organization, is their similarity to those of Joseph Black. A comparison of early manuscript versions of Black's lectures [54] with those of Rush show them to be almost identical in many instances. Rush must have drawn freely from his own notes taken at Black's lectures. This parallelism in the Black and Rush chemical lectures is another instance of the direct transmissal of Edinburgh teachings to Philadelphia.[55]

One other notable aspect of Rush's lectures on chemistry was his insistence on applying chemical principles to medicine. He was most cognizant, as was Morgan, of the importance of chemistry to the physician. In his introductory lecture (1771) he holds that "a knowledge of chemistry is indispensably necessary to a physician. It is impossible to make ourselves acquainted with the nature and laws of the Animal Aeconomy without it." [56] Rush continues for some 10 pages of manuscript to point out the utility of chemistry to medicine, discussing such topics as toxicology, dietetics, useful remedies, etc. In his conclusion to the introductory lecture [57] Rush cautions the student as to how he should study:

> Among many other advantages which you will derive from reading Medical Books, I shall mention only one, which to a liberal spirit will be of great consequence, & that is, it will tend to deliver you from that *servile obedience*, which young men are apt to pay to the Opinions of their Masters, & will make you dare to think for *yourselfs*. A step this which never fails paving the way for a man's becoming Eminent in his Profession.

Rush continued to teach chemistry to the medical students from 1769 to 1774, at which time because of the occupation of Philadelphia by the British army and the War of the Revolution the operations of the medical school were suspended. From 1774 to 1778 Rush was occupied with his duties as a member of the Continental Congress and the medical depart-

[54] See above, footnote 40.

[55] See above footnote 11. M. E. Brown has indicated the likeness of Kuhn's lectures to Cullen's publications; *Journal of the History of Medicine and Allied Sciences, 2,* 163-177 (1950).

[56] Alison Ms., p. 5.

[57] *Ibid.*, p. 25.

ment of the Continental Army. He also was involved in the "Philadelphia Controversy" with Morgan against Shippen as to the administration of medical services during the war.[58] The College reopened in 1778 but an attack by radical governmental elements led, in 1779, to the abrogation of its charter, and a new institution, the University of Pennsylvania, was established. All the college professors lost their places by this act so that it became necessary to organize the medical faculty anew. After some difficulty, the affair was finally arranged by the reinstatement of the former professors to the positions they had respectively held in the College. Rush, however, refused and James Hutchinson was elected professor of chemistry, an appointment he held until November, 1783, when Rush reconsidered and was reelected to the chair. In 1789, however, the legislature restored the original charter to the College, but still left the University in existence. Two institutions were thus created under the titles of the College of Philadelphia and the University of Pennsylvania, each with the privilege of having a medical school. This resulted in the formation of two medical faculties. Rush joined the College group but resigned his chair of chemistry in the same year to take the chair of the theory and practice of physic vacated by Morgan's death. Although this brought to a close Rush's formal association with chemistry, he was to continue to influence the chair until his death.

The chair of chemistry in the College was conferred, after Rush's resignation, on Caspar Wistar. It was now united with the institutes of medicine as a combined professorship. Wistar, who had received his medical degree in Edinburgh (1786), was a student of John Redman, as had been Morgan and Rush. Little is known of his lectures in chemistry. The manuscript notebooks of Black's chemistry lectures in Wistar's hand (?)[59] give a clue as to his approach. Black was still professor of chemistry when Wistar was there. He might well have followed Black in his presentations. Wistar attended Rush's lectures on chemistry.

In the University of Pennsylvania, James Hutchinson, a member of the Board of Trustees, was appointed to the united chair of materia medica and chemistry in the medical faculty. Hutchinson had held the chair of chemistry in the University when it was first established and Rush had refused to accept his old post. With Rush's reelection, he had given up the chair. When a graduate of the College Medical School, in 1774, he was given a gold medal for his superior knowledge in chemistry. Hutchinson must have taken Rush's course in chemistry. He later studied in

[58] See above, footnote 3.

[59] See above, footnote 40.

Europe and on his return lost all his library when the ship was captured by the British.[60] Nothing is known of the chemistry lectures of Hutchinson in the above or later periods of his professorship. Rush did note in November of 1790 that "Dr. Hutchinson has a larger class than Dr. Wistar." [61]

The maintenance of two schools was soon found to be undesirable so that on September 31, 1791, some two years after the revival of the College, the schools united under the name of the University of Pennsylvania. The professorships as a consequence were once again rearranged. Wistar surrendered to Hutchinson his chair which was now once again a separate professorship. The new appointments took place on January 23, 1792.[62]

Hutchinson held the chair until 1794 when he died. Rush has recorded his death in a series of letters.[63] The chair of chemistry was conferred, January 7, 1794,[64] on John Carson, a member of the Board of Trustees, but he died before entering on his duties.

Carson's death left the chair of chemistry vacant again. The position was offered to Joseph Priestley who had recently emigrated to America,[65] but it was declined. Rush notes in a letter to John Redman Coxe that "Dr. Carson died a few days ago. The professorship of chemistry will be offered to Dr. Priestley." [66] Priestley was actually elected to the chair on November 11, 1794. In a letter also to Coxe, December 19, 1794, Rush writes: "Dr. Priestley has declined the chemical chair, and as yet no successor has been appointed to it." [67] After Priestley came to America in 1794, Rush became one of his close friends. It is not surprising then to find him urging Priestley to accept the professorship. Priestley's letters to Rush have been printed in Bolton's *Correspondence*

[60] Ms. of diary about trip in library of American Philosophical Society, Philadelphia. See the *Minute Man* (Publication of the Sons of the Revolution in the State of Illinois), *39*, No. 1-4; *40*, No. 1.

[61] Letter from Benjamin Rush to Armand John De Rosset, Philadelphia, November 24, 1790, *Letters*, vol. 1, 571-573.

[62] Minutes of the Board of Trustees, vol. 5, p. 48.

[63] *Letters*, vol. 2, pp. 648-654.

[64] Minutes of the Board of Trustees, vol. 5, p. 97.

[65] Smith, E. F., *Priestley in America, 1794-1804*, Philadelphia, 1920; J. S. Hepburn, *Journal of the Franklin Institute, 244*, 63-72, 95-107 (1947).

[66] Letter from Benjamin Rush to John Redman Coxe, Philadelphia, November 4, 1794, *Letters*, vol. 2, pp. 751-753.

[67] Letter from Benjamin Rush to John Redman Coxe, Philadelphia, December 19, 1794, *Letters*, vol. 2, pp. 753-754.

of Priestley,[68] but the letters of Rush to Priestley have not been found. In a letter to Rush on September 14, Priestley admits that "the Professorship of Chemistry in your College has, I own, some attractions for me. . . ." [69] On October 28, Priestley indicated to Rush that he was well settled in Northumberland.[70] Priestley tells Rush on November 3, that he "cannot appear as a *candidate*, but if the place was offered to me, I would do my best to discharge the duties of it." [71] Priestley, however, changed his mind, for on November 11, he writes, "I hope you will excuse my weakness (for such you will consider it), when after giving you reason to expect that I would accept the professorship of chemistry, if it was offered to me, I now inform you that I must decline it." [72] Priestley's reasons for deciding not to accept the chair were that he liked country life which would provide him seclusion more conducive to study as well as be more healthful.

With Priestley's refusal of the chair, another candidate was sought. Rush came forward to recommend James Woodhouse who had been apprenticed to him in 1787. Woodhouse, who had obtained his degree in medicine in Philadelphia (1792), by 1792 was as well known as a chemist as he was as a physician. In a letter to the Trustees of the University of Pennsylvania, Rush sets forth Woodhouse's qualifications: [73]

> The bearer, Dr. James Woodhouse, was my pupil for four years, during which he employed much of his time in chemical research and experiments. He has since devoted himself with great ardour to the study of Chemistry. From his talents, industry and knowledge, I believe him to be amply qualified to fill the Chemical Chair in the University of Pennsylvania.

Woodhouse was elected on Tuesday, July 7, 1795 to the chair of chemistry.[74] In a letter [75] composed shortly after the elections, Rush records

[68] Bolton, H. C., *Scientific correspondence of Joseph Priestley*, New York, 1892. To be referred to as *Bolton*.

[69] Letter from Joseph Priestley to Benjamin Rush, Northumberland, September 14, 1794, *Bolton*, pp. 139-141.

[70] Letters from Joseph Priestley to Benjamin Rush, Northumberland, October 28, 1794, *Bolton*, pp. 141-143.

[71] Letter from Joseph Priestley to Benjamin Rush, Northumberland, November 3, 1794, *Bolton*, pp. 143-144.

[72] Letter from Joseph Priestley to Benjamin Rush, Northumberland, November 11, 1794, *Bolton*, pp. 144-145.

[73] Smith, E. F., *James Woodhouse, a pioneer in chemistry, 1770-1809*, Philadelphia, 1918, p. 60. The letter is dated May 20, 1795.

[74] Minutes of the Trustees, vol. 5, p. 132.

[75] Letter from Benjamin Rush to John Redman Coxe, Philadelphia, July 18, 1795, printed in *James Woodhouse, op. cit.*, p. 61.

the outcome which shows that Woodhouse was opposed by other candidates: "I have great pleasure in informing you that Dr. Woodhouse is elected Professor of Chemistry in our University. The votes were 10 in his favor, 6 for Barton & one for Dr. Rose. The appointment gives great pleasure to all the students of medicine." Rush fails to mention that Adam Seybert was also a candidate, and one whom he personally opposed. Apparently Seybert, although an experienced chemist, got no votes. Woodhouse began to lecture on chemistry in the fall session of 1795. His first class had "upwards of 70" students.[76]

Woodhouse made many notable contributions to chemistry which are well covered in Smith's work.[77] He was one of the last American chemists who adhered to a belief in phlogiston, a stand in which he defended Priestley, one of its staunchest advocates. Caldwell[78] characteristically has contributed some unusual notes about Woodhouse: "To everything, however, but experimental chemistry, Woodhouse soon became again comparatively dull and indifferent. But for that form of the science, he retained until his death, a predilection and fondness, which were denominated, with sufficient aptitude, in technical language, his 'elective attraction.'" In his lectures, Woodhouse recommended "'Miss Chemistry as their only mistress,' the only object of their devotion and homage."[79] The lectures of Woodhouse "rarely occupied, each of them, more than forty minutes—and often not near so much."[80] When asked why he lectured only forty minutes, Woodhouse replied, "that no man could dwell, in discussion, on a single topic more than five minutes without talking nonsense."

Three student manuscript notebooks of Woodhouse's chemical lectures have been found;[81] two are undated, one bears the date 1809, the year he last lectured. Two of the notebooks have 59 lectures transcribed, the full course Woodhouse presented. The lectures are principally on strict chemical subjects, e. g., Soda, Acids, Gold, Silver, Borax, etc. Of the

[76] Letter from Benjamin Rush to John Redman Coxe, Philadelphia, December 8, 1795, *Letters*, vol. 2, pp. 765-766.

[77] See above, footnote 73.

[78] *Autobiography of Charles Caldwell, M. D., with a preface, notes, and appendix, by Harriot W. Warner*, Philadelphia, 1855, pp. 174-175.

[79] *Ibid.*

[80] *Ibid.*, p. 176.

[81] Ms. 29 lectures, signed Clifford Clark, library of the University of Pennsylvania School of Medicine; Ms., 2 vols., 59 lectures, no date or name, library of College of Physicians, Philadelphia; Ms., 2 vols., 59 lectures, signed S. Sommer, Edgar Fahs Smith Collection, University of Pennsylvania.

59 lectures, only two are on animal substances. This is in marked contrast to Rush who spent as much time as possible on topics mutually relating to medicine and chemistry. It can be definitely stated that Woodhouse's lectures departed from the Rush tradition of interrelating chemistry and medicine. Woodhouse, it appears, was primarily concerned with chemistry as a science in itself and not in its utility to the physician. This outlook by Woodhouse prompted Rush no doubt to observe in his *Commonplace Book*[82] that "though a medical Professor, he (Woodhouse) scouted the utility of medicine upon all occasions." Woodhouse continued to teach chemistry regularly to the medical school for fourteen years; he died unexpectedly in the prime of his life at the age of thirty-nine on June 4, 1809. His death prompted John Sommer, a student in the last class Woodhouse had, to add a final line to his chemistry notes following Woodhouse's closing words to the last lecture of the course.[83]

With this Gentlemen we finish our course of chemistry & I bid you all an affectionate farewell. Alas but too true for he died.

The provision of a successor to Woodhouse created in 1809 a problem among the University of Pennsylvania medical faculty which was to persist at least to the 1850's, namely, the question of who should teach chemistry to a medical class, a chemist without a medical background, or a physician with chemical inclinations. This issue was further extended to include the question as to whether the chair of chemistry really should be a part of the medical faculty. In some quarters, the utility of chemistry to medicine was seriously debated, to the extreme proposal of removing chemistry from the medical curriculum entirely. The controversy which began with the selection of John Redman Coxe to fill the chair of chemistry was to subside after the election, only to reappear again in 1818 when Coxe resigned and the chair was once again open. It is an extremely interesting story in that it reflects the personalities of the entire medical faculty. There is a hint of the controversy in Carson[84] but with the exception of two publications by the present author on certain aspects of the subject, there is no mention of its occurrence elsewhere. Only the preservation of many of the original documents in the Archives of the University of Pennsylvania and the rich collection of the College of Physicians, Philadelphia, make a discussion possible now.

[83] *Autobiography*, p. 316.

[84] Carson, *op. cit.*, p. 109.

[82] See above, footnote 81.

[85] See below, footnotes 129 and 130.

The first mention of the question of chemistry and its place in the medical faculty has been found in a letter written by Rawle of the Board of Trustees to Nathaniel Chapman, July 5, 1809.[86] Woodhouse had been dead for just a month, and the selection of a successor was undoubtedly under active consideration.

At a meeting of the Trustees of the University on the 3rd. Inst a committee was appointed to inquire & report whether any, & what alterations are necessary in the medical department.

The general impressions made use of, render it proper to state, that the object is to inquire, whether the Professorships of Chemistry, Botany, & Natural History ought from their nature to be considered as appertaining to the medical department, & to be filled exclusively by gentlemen of the medical profession.

The Committee consisting of Mr. Clymer, Mr. J. B. McKain & me will meet on friday next at my house & will be happy to receive any observations which the medical faculty may think it proper to communicate on the subject.

The minutes of the meeting of the medical faculty record the response of this body to the Trustees' resolution.[87] For July 6, 1809, the following entry is made:

That in the opinion of the Med: Professors, the professorships of Chemistry, Botany & Natural history ought, from their important nature to be considered as appertaining to the Medical Department, & to be filled exclusively by gentlemen of the medical profession.

With respect to the professorship of Chemistry, the Med: Professors beg leave to suggest, that from the intimate connexion subsisting between this Science & all other branches of Medicine, they think the interests of the Institution demand (more especially at this time) that the Professor of Chemistry in the University of Penn.a should be a physician.

They take the liberty further to state, that the duties hitherto performed by the Professor of Chemistry in this University, in the examination of Candidates in private, & of their theses in public, can only be performed in a proper manner by a person who possesses a competent knowledge of every branch of Medical Science.

The resolution, sent as a letter to the Trustees, was signed by Rush, Wistar, Barton, and Physick. Both Rush and Wistar had of course experience in teaching chemistry. Barton had been an unsuccessful candidate for the chemical chair in 1795. On July 8, two days after the group

[86] Letter from Nathaniel Chapman to William Rawle, Philadelphia, August 21, 1818, containing copy of letter of July 5, 1809, by William Rawle; University Papers, X, 1818, p. 61, Archives of the University of Pennsylvania.

[87] Ms., minutes of meeting of medical faculty in regard to professor of chemistry, University Papers, VI, 1808-1810, p. 40, Archives of the University of Pennsylvania.

had sent their opinion to the Trustees, "the medical Professors convened . . . at the request of Dr. Wistar, who states that he had been applied to by Mr. J. B. McKean—one of the Trustees of the U. for the reasons which induced the Med: Prof: to adopt the opinion advanced in the preceding communication." [88] The following statement was sent in answer to McKean.[88]

It is particularly expedient that the Professor of Chemistry should have a full & extensive knowledge of medicine, because many very valuable articles of the Materia Medica are derived from Chemistry; & the nature of these articles can only be understood by a person who has a competent knowledge both of Chemistry & Medicine.

The Students of Medicine, who almost exclusively support the professorship of Chemistry, are induced to do so, in consequence of its application to pharmacy & the different branches of Medicine, viz. Physiology, Pathology, Therapeutics, Materia Medica & the practice of Physick. No man can teach pharmacy unless he has *some knowledge of the practice of Medicine & the application of Chemistry to Physiology & the other branches of Medical Science*, above mentioned, can only be taught by a Chemist who *understands the other subjects.*

The teaching of chemistry in this University, has hitherto been confided to the Professors of Medicine, & the success attending this arrangement, appears to us a good reason for continuing it.

In adition to this, it may be observed, that we believe chemistry is taught by Medical professors in all the Universities of Europe, that of Upsal excepted. . . .

Rush, Wistar, Barton, and Physick conclude their stand as follows: "We beg leave again to suggest, that our Professor of Chemistry has always taken an important part in the business of the Medical faculty—judging of qualifications of the respective Candidates in every branch of their profession & examining Inaugural theses on all subjects relating to Medicine."

On July 10, shortly after the medical faculty had communicated their sentiments to the Trustees, a Board meeting was held. Rawle submitted the following resolutions to the Trustees.[89]

1. That the Professorships of Botany, Natural History and Chemistry shall not hereafter be considered as appertaining to the Medical Department of the Faculty, although gentlemen of the medical profession are and shall continue eligible to those professorships.

2. That it shall be the duty of the Professor of Chemistry to include the elements of Pharmacy and Mineralogy in his course of Lectures.

3. That the senior class, before taking a Degree of Bachelor of Arts shall attend one course of Lectures on Chemistry.

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[88] *Ibid.*

[89] Minutes of the Board of Trustees, vol. 5, p. 350.

A vote was taken "to the said report, the first and second resolutions passed in the negative, and the third was postponed for further consideration." The action of the Trustees was unquestionably brought about by the report of the medical faculty. Rush, who had always demonstrated the relationship of chemistry to medicine, probably was the responsible influence behind the medical faculty decision. At the same meeting, Coxe was elected to the chair of chemistry.[90]

Rush not only defeated the attempt to detach chemistry from the medical faculty, but he succeeded in obtaining the election of his own candidate, John Redman Coxe, to the chair of chemistry. Coxe who had been an apprentice to Rush was told as early as 1794 by Rush to prepare himself for a chemical professorship. In a letter to Coxe, then at Edinburgh, Rush mentions that Priestley had been offered the chair, continuing "what say you to qualifying yourself to succeed him? His age will prevent his discharging the duties of the chair more than eight or ten years."[91] Rush wrote in Coxe's behalf to the Trustees outlining the latter's qualifications and expressing the belief that he was "amply qualified by talents, knowledge and industry to fill the vacant chair. . . ."[92] Fothergill also wrote to the Trustees on June 3 recommending Coxe.[93] Coxe wrote to Rev. Dr. White on June 6 asking for the nomination to the chair.[94] On June 15, Coxe addressed a formal request to J. B. McKean of the Board of Trustees for the professorship.[95] Other letters of recommendations were sent in Coxe's behalf.[96]

Two other candidates appeared for the chair of chemistry. They were Robert Hare and Seybert; the latter had tried for the chair against Woodhouse in 1795. Benjamin Silliman's name was also suggested[97] but he

[90] *Ibid.*, vol. 5, p. 351.

[91] See above, footnote 67.

[92] Letter from Benjamin Rush to Joseph B. McKean, n. p., n. d., University Papers, VI, 1809, p. 53, Archives of University of Pennsylvania.

[93] Letter from A. Fothergill to Trustees of the University of Pennsylvania, n. p., June 3, 1809, University Papers, VI, 1809, p. 53, Archives of University of Pennsylvania.

[94] Letter from John Redman Coxe to Rev. Dr. White, Philadelphia, June 6, 1809, University Papers, VI, 1809, p. 27, Archives of University of Pennsylvania.

[95] Letter from John Redman Coxe to Joseph B. McKean applying for chair of chemistry, Philadelphia, June 15, 1809, University Papers, VI, 1809, p. 31, Archives of the University of Pennsylvania.

[96] University Papers, VI, 1809, pp. 35, 36, 37, 38, Archives of the University of Pennsylvania.

[97] Letter from Charles and Eliah Chauncey, with added testimony of A. Green, Philadelphia, June 16, 1809, University Papers, VI, 1809, p. 34, Archives of the University of Pennsylvania.

never appeared as a voluntary applicant. Caldwell [98] devotes several pages to the election observing that Rush was "by far the ablest tactician of the day" who exerted himself to get the chair for Coxe to strengthen his own position in the medical faculty. Coxe was regarded as unqualified for the professorship by Caldwell, who supported Seybert; he does not mention Hare at all. Seybert was also sponsored by Wistar. Since Seybert and Coxe were physicians, they could not be discounted on this ground. Hare, however, had not received a medical education; this was held against him in view of the standards held by the medical faculty. Hare was, nevertheless, spoken for by a host of friends; [99] among them, Silliman and Chapman. In the letter from Chapman to Hopkins of the Boards of Trustees the question of Hare not being a physician is discussed: "With respect to the incapacity of Mr. Hare, arising out of his want of a medical education, to which you allude, I must say that it strikes me with no force and it can hardly be pressed. . . ." [100] No letters have been found in support of Seybert. Rush in a letter to his wife, July 7, sums the election up well: [101]

> The election for a successor to Dr. Woodhouse is to take place on Monday. In consequence of the medical professors' having said in answer to a letter from a committee of the trustees that a "physician is necessary to discharge all the duties of the chemical chair," it *is supposed* Mr. Hare will not be the successful candidate. Dr. Coxe's friends are more sanguine than they have yet been, but the issue of the election is still doubtful. Dr. Sybert is powerfully supported, and he has acknowledged merit.

Coxe was elected on July 10, 1809, and Rush has tabulated the votes in his *Commonplace Book*,[102] "the trustees 19 in number, voted as follows: Dr. Coxe, 10 votes; Robt. Hare, 7; Dr. Sybert, 2." Coxe immediately set to work on his course suggesting that a summer session in chemistry be given as well.[103] He started his first regular lectures to the medical class in the fall of 1809. The lectures were found "highly satisfactory,

[98] Caldwell, *op. cit.*, pp. 306-307.

[99] University Papers, VI, 1809, pp. 28, 29, 30, 30a, 32, 33, Archives of the University of Pennsylvania.

[100] Letter from Nathaniel Chapman to Joseph Hopkinson, n. p., n. d., University Papers, VI, 1809, p. 30a, Archives of the University of Pennsylvania.

[101] Letter from Benjamin Rush to Mrs. Rush, Philadelphia, July 7, 1809, *Letters*, vol. 2, pp. 1006-1007.

[102] *Autobiography*, p. 279.

[103] University Papers, VI, 1809, pp. 43, 44, 52, Archives of the University of Pennsylvania.

but his experiments by no means so much so as his friends expected." [104]

It is not possible to evaluate the course Coxe gave to his students since no notebooks of his lectures have been located. He was, however, a good chemist as evidenced by his stand against the phlogistic adherents.[105] The chemical medical side of Coxe is well illustrated by his *American Dispensatory*.[106] Coxe probably presented chemistry in its relation to medicine after the tradition of Rush. The lectures in chemistry to the medical students were given by Coxe from 1809 through the 1818 session. In May of 1818 he applied for the chair of materia medica at the University [107] soon to be vacated by Dorsey giving as a reason his desire to return to active medicine. In a letter to North Carolina, Coxe sets forth the same reasons also adding his viewpoint as to who should succeed him: [108]

> My reasons for wishing that chair, & leaving Chemistry, are no wise important, they arise from a wish to resume the practice of physic, & I hope I should not be an inefficient teacher, in a branch of Medicine, in which much of my former pursuits have been intimately blended. Should I obtain the situation, the chemical chair will open for competition—and 3 Candidates are mentioned—Dr. Patterson our present Profr. of Nat. philosophy—Dr. Cooper & Dr. Hare—the former of whom *only* one is a *regular* Graduate—the others having obt. degrees by special license from N York & Cambridge without undergoing a regular study & examination—and my opinion decidedly is that no one ought to hold a situation as Examiner of qualifications of any branch of Science, which he has not equally gone through all the preliminary steps—Thence you may imagine my wishes would favor the first—who, I doubt not would fill the chair with much credit & advantages.

Coxe was elected to the chair of materia medica (July 10, 1818) having resigned the professorship of chemistry on July 7, 1818.[109]

[104] Letter from Benjamin Rush to James Rush, Philadelphia, November 29, 1809, *Letters*, vol. 2, pp. 1024-1025.

[105] Coxe, J. R., *Observations on combustian and acidification; with a new theory of those processes, founded on the conjunction of the phlogistic and antiphlogistic doctrines*, Philadelphia, 1811.

[106] *The American Dispensatory, containing the operations of pharmacy; together with the natural, chemical, pharmaceutical and medical history of the different substances employed in medicine*, Philadelphia, 9 editions, 1806-1831.

[107] Letter from John Redman Coxe to the Board of Trustees of the University of Pennsylvania, Philadelphia, May 29, 1818, University Papers, X, 1818, p. 29, Archives of the University of Pennsylvania.

[108] Letter from John Redman Coxe to Dr. J. Norcom, Edenton, North Carolina, Philadelphia, May 29, 1818, Carson Ms., library of College of Physicians, Philadelphia.

[109] Letter from John Redman Coxe to Trustees of the University of Pennsylvania, Philadelphia, July 7, 1818, University Papers, X, 1818, p. 41, Archives of the University of Pennsylvania. Coxe held the chair of materia medica until 1835, when it was declared vacant by the Trustees. The action of the Trustees resulted from a protest by the students against Coxe as an instructor.

The vacancy in the chair of chemistry brought forth the arguments of the question of the relation of chemistry and medicine anew. As Coxe had anticipated, there were three claiments for the chair: Hare, Cooper, and Patterson. At this time several opinions were advanced by the medical faculty in regard to the election. First, that the chair of chemistry need not be occupied by a medical man, for it should be separated from the faculty of medicine. Dorsey was a strong advocate of this approach. Another group, as in 1809, felt that only one who had received a medical education should be appointed to the chair of chemistry for it was his duty, as a professor in the medical faculty, to pass upon the merits of candidates for a "degree in medicine." Chapman, who was now professor of the theory and practice of medicine, institutes, and clinical medicine, in a reversal of opinion, went still further and since he "considered chemical knowledge rather as an ornamental than an indispensible, or even useful part of medical education, he thought the chair of chemistry ought to be separated from the medical faculty; and that the students should be exonerated from the *necessity* of attending to this branch of knowledge, when they had so many other branches to attend to, which were absolutely indispensible." [110] Rush, Wistar, and Barton, who had stressed the need of chemistry in medicine previously, had died since the election of Coxe in 1809. With the opposition for the most part gone, it was not difficult for Chapman and others of the faculty to press their convictions. This they did to the extent of persuading Robert Hare, who was elected to the vacant chair of chemistry (September 18, 1818), to relinquish his privilege of judging the qualifications of the medical students when they were examined for their degrees.[111] He also agreed not to sign their diplomas, "confining himself simply to the examination of the students—in chemistry only—the rest of the faculty, reserving to themselves the exclusive right of deciding upon the result of such examination, which was to take place in their presence." [112] The chair of chemistry, although retained in the medical faculty, was relegated, therefore, to one of little importance.

The documents relating to the 1818 election are voluminous and need only be mentioned here. Hare was supported by many letters [113] which

[110] Cooper, T., *A discourse on the connexion between chemistry and medicine*, Philadelphia, 1818, p. v.

[111] For full details of the election of Hare to the chair of chemistry see E. F. Smith, *The Life of Robert Hare, an American Chemist (1781-1858)*, Philadelphia, 1917, pp. 57-64.

[112] See above, footnote 110.

[113] University Papers, X, 1818, pp. 5, 25, 26, 27, 28, 32, 38, 38a, 39, 39a, Archives of the University of Pennsylvania.

were for the greater part reprinted with some of his 1809 letters of recommendation in a 24 page brochure.[114] Patterson was acclaimed by no less a number.[115] These too were issued in printed form.[116] Cooper set forth his qualifications in a letter to the Trustees stressing his medical background as against Hare and Patterson.[117] Other letters have survived relative to his application.[118] A printed tract pertaining to Cooper's medical abilities was issued after the election.[119]

The question of whether a chemist could teach a medical group must have still annoyed the Trustees for in a letter from David Hosack to W. Rawle of the Board, the entire matter is reiterated.[120] Hosack advised them that a chemist would serve just as well as a physician. As already stated, Hare was elected even though he was a chemist; the votes cast were Hare 13, Cooper 6 and Patterson 1 on the second ballot.[121] The agreement of Hare not to sign the medical diplomas was pressed by the faculty, not the Trustees. The election must have aroused many angers for on August 3, 1818, a group of some fifty medical students petitioned the Trustees to elect a medical man to the chair; if not, dire consequences were promised.[122] The Minutes [123] of the Board note the petition and it was tabled.[108] Another petition was sent to the Medical faculty after the election of Hare.[124] They asked the faculty to rectify the wrong and not

[114] *Testimonials, submitted to the consideration of the Trustees of the University of Pennsylvania* (Philadelphia, 1818).

[115] University Papers, X, 1818, pp. 43, 44, 45, 46, 47, 52, 53, 53a, Archives of the University of Pennsylvania.

[116] *Communication made by Dr. R. M. Patterson, to the Honourable the Board of Trustees of the University of Pennsylvania, at their meeting of the 4th of August, 1818*, Philadelphia, 1818.

[117] Printed letters from Thomas Cooper to the Trustees of the University of Pennsylvania, Philadelphia, March 5, 1818, University Papers, X, 1818, p. 10, Archives of the University of Pennsylvania.

[118] University Papers, X, 1818, pp. 24, 49, 55, 56, 58, Archives of the University of Pennsylvania Library.

[119] (On cover page): *The following papers, stated to have been mislaid, having been returned, on the 13th of August, by the Rev. Dr. Wilson, in whose possession they were, they are now printed in confirmation of Dr. Cooper's claims as a physician* (Philadelphia, 1818).

[120] Letter from David Hosack to William Rawle, New York, August 19, 1818, University Papers, X, 1818, p. 59, Archives of the University of Pennsylvania.

[121] *The Democratic Press, 12*, No. 3155 (September 2, 1818).

[122] Ms., Petition of medical students of University of Pennsylvania to Board of Trustees, University Papers, X 1818, p. 50, Archives of the University of Pennsylvania.

[123] Minutes of the Board of Trustees, August 4, 1818, vol. 6, p. 257.

[124] Ms., Memorial of the Medical Students to the Medical faculty, September 9 (1818), Archives General, 1818, Archives of the University of Pennsylvania.

permit a non-medical man to teach them chemistry and examine them for their degree. They expressed great distress over the fact that their diplomas would be looked upon with contempt in the future. The petition was referred to a committee composed of Physick, Chapman, and Dorsey for study, no friends of Hare as already shown, and may well have re-resulted in Hare's capitulation to the demands of the medical faculty. The entire controversy over the chair including the action of the medical students and the faculty came to the attention of the press. In a heated exchange between *Paulson's American Daily Advertiser* [125] and the *Democratic Press* [126] the entire matter was laid before the public. Nor was the general feeling of the inutility of chemistry to medicine confined only to the medical faculty of the University, for there were others who supported Chapman. One of the foremost of this faction was Charles Caldwell, who at that time was professor of natural history. Shortly after the election of Hare, Caldwell made a violent attack on the use of chemistry to medicine in a lecture at the Medical School (November, 1818). The following extract is from this caustic tirade: [127]

> To some of you, it may, perhaps, appear extraordinary, that I have represented chemistry, as only a collateral element of medicine. It is, however, indisputably, nothing more. When strictly scrutinised, I am at a loss to perceive, wherein it is more intimately connected with medical science, than zoology, botany, or mineralogy. Nor can I recognize any propriety in the expression, "medical chemistry," beyond that of "medical botany, zoology, or mineralogy." The three departments of nature, to which those branches of science relate, furnish the physician with many of his remedies: and, with an immediate reference to his profession, chemistry, unquestionably, does nothing more.
>
> Shall I be told, that chemistry aids, in the explication of any of the phenomena or laws of the living body, either in a healthy or a diseased state?—that it sheds light on physiology, pathology, or therapeutics? For the most correct and satisfactory views I have been able to form on this subject, I feel myself compelled to deny the position. As far as chemistry has mingled in discussions of this nature, it has not only darkened them, but filled them with error. It has superadded corruption to what it found already sufficiently corrupt.

The answer to this ridicule was a brilliant lecture delivered at the University of Pennsylvania by Thomas Cooper, on November 5, 1818, and published shortly after its presentation by Abraham Small as a pamphlet

[125] *Paulson's American Daily Advertiser, 57*, Nos., 13,040, 13,043, 13,046 (September 8, 11, 15, 1818).

[126] *Democratic Press, 12*, Nos. 3155, 3158, 3164, 3166 (September 2, 5, 12, 15. 1818).

[127] *A discourse on the connexion between chemistry and medicine*, p. xii.

entitled *A Discourse on the Connexion between Chemistry and Medicine.*[128] It is a valuable document, for not only does it summarize the dissension among the medical faculty, but it presents in a lucid and concise manner the many relationships of chemistry and medicine as understood at this period. The *Discourse* has been discussed at some length elsewhere [129] as has Charles Caldwell and his bitter renunciation of chemistry.[130]

Hare was to prove himself a worthy occupant of the chair. The practice of his not signing diplomas must have been discontinued for diplomas as early as 1824 [131] bear his signature. There are no student notebooks of Hare's lectures, for he provided them with printed *Minutes* [132] and a *Compendium.*[133] His printed outline of the lectures shows them to be of the best chemistry of the time with no extensive emphasis on medicine however. Hare nevertheless was conscious of the value of chemistry to medicine. In an introductory lecture delivered in 1843,[134] he makes his feeling evident:

> Among the branches of medical science, which have been made necessary to a medical degree, the practice of medicine, surgery, and midwifery are evidently those which are most necessary to the healing art; but it is no less evident that by reading and attending the practice of a skilful instructor, much progress may be made in these sciences, independently of the assistance of lectures. Familiarity with them must of necessity grow, as practice is extended. These observations are not applicable in the case of chemistry and anatomy of which, if the student acquire no knowledge while at the university, there is generally little opportunity or leisure for its attainment afterwards.
>
> Neither anatomy nor chemistry can be well learned without the aid of dissections or experimental illustrations, which can but very imperfectly accompany instruction, where a large concourse of students does not stimulate and justify the requisite exertion and expenditure.
>
> Since among all other enlightened nations of the present age, a knowledge of

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[128] See above, footnote 110.

[129] Klickstein, H. S., *The Library Chronicle* (University of Pennsylvania), *16*, 64-80 (1950).

[130] Klickstein, H. S., *Chymia*, *4*, in press.

[131] Diploma of Doctor of Medicine, University of Pennsylvania: to Richard Gregg, 1824, library of the College of Physicians, Philadelphia; to Charles S. Rohr, 1824, Rittenhouse Book Store, Philadelphia.

[132] *Minutes of the course of chemical instruction in the medical department of the University of Pennsylvania*, 1822.

[133] *Compendium of the course of chemical instruction in the medical department of the University of Pennsylvania, for the use of his pupils*, Philadelphia, 4 eds., 1827-1840.

[134] *Lecture, Introductory to a course on chemistry, in the University of Pennsylvania, Delivered November 7, 1843*, Philadelphia, 1843, pp. 19-21.

chemistry is deemed essential to a physician, it cannot be otherwise regarded among the people of the United States. Patriotism forbids that medical education shall, in our country, *retrocede* during an epoch, signalised in the old world by its advancement.

Hare resigned his professorship on May 10, 1847. With this event there ends a chapter in the history of the chair of chemistry of the University of Pennsylvania School of Medicine. From its inception it was influenced by the Edinburgh School of Cullen and Black, who in turn had a strong bond with Leiden and the traditions of Boerhaave. Rush, more than any other individual, dominated the chair from its beginnings to his death in 1813. Wistar, Hutchinson, Woodhouse, and Coxe, all occupants of the chair, were the students of Rush. The doctrine of the utility of chemistry to medicine was thus perpetuated. With Rush's passing a new movement predominated, that of the separation of chemistry and medicine. It was a change Rush would have sincerely regretted.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

REPORT ON THE THIRTEENTH CONGRESS OF THE INTERNATIONAL SOCIETY OF THE HISTORY OF MEDICINE

RALPH H. MAJOR

The Thirteenth Congress of the International Society of the History of Medicine, which was held at Nice, September 4-14, 1952, was a most successful meeting. Under the genial and dynamic leadership of Prof. Laignel-Lavastine of Paris, who presided at most of the sessions, ably assisted by Prof. Sondervorst of Louvain, who carried the heavy responsibility of arranging and expediting the program, the congress was an impressive demonstration of the interest in medical history in many lands and of the international friendship and solidarity of medical historians.

The list of "congressistes," 101 in number, arranged in alphabetical order, began with "Allemagne" and closed with "Yougoslavie." There were delegates from 23 nations, and, while most of the papers were presented in the French language, some were also read in English, Italian, Spanish, and Portuguese. No delegates were present from countries behind the Iron Curtain, but telegrams were read from members in Poland and Hungary, wishing the congress success and expressing regret at their inability to attend.

The congress was opened with a "Séance Solennelle" in the grand amphitheatre of the Centre Universitaire, presided over by M. Jean Médecin, deputy mayor of Nice, who welcomed the members in the name of the city and whose sincere interest in the congress was shown by his attendance at meetings and at the official banquet. His address of welcome was followed by brief acknowledgments from official delegates, who thanked M. Médecin for his warm words of welcome and stressed the charms of Nice and the delightful climate that welcomed the visitors. A letter was read from Prof. Jules Guiart, who had planned to preside at the congress, expressing his regret at being absent because of illness. Prof. Laignel-Lavastine, who was then chosen as presiding officer, read an eulogy of Prof. Tricot-Royer, the founder of the International Society of the History of Medicine. In an atmosphere of good will and enthusiasm, the congress adjourned until the serious work of the morrow.

The papers which were read during the following four days covered many phases of medical history. The official program listed forty-eight papers, but, because of the absence of the authors, only thirty-five were presented in person. Some authors had sent their papers to be read by the secretary. Some of the papers described the activities of certain notable physicians; others discussed the influence of certain medical schools and medical movements; others touched

upon the relationship between art, medicine, and folklore; some traced the genesis of great medical discoveries; some gave a resumé of medical education and progress; while certain others were difficult to classify. A complete list of the titles would be too long to include in this brief account.

Among the papers describing the activities of notable men, Dr. Lemay of Nice and Dr. Finot of Paris presented a paper on Haller's researches on the egg; Dr. Mariotti of Ancona and Dr. Bodenheimer of Jerusalem read papers on Leonardo da Vinci's influence and his anatomical achievements; Dr. Galassi of Bologna described the labors of Tito Vanzetti; Dr. Glesinger of Zagreb presented some interesting details concerning Mariano Santo's activities at Ragusa. Dr. Leibowitz of Jerusalem discussed the importance of Avicenna and showed beautiful colored slides of the superb Hebrew manuscript of the *Canon*, now one of the chief treasures of the Library of Bologna. Dr. Muntner of Jerusalem presented new details of the life and work of Isaac Israëli; Dr. Finot of Paris discussed Raymond Finot, physician to the Prince of Condé; Dr. Belloni of Milan read a very interesting paper on the gynecological and pediatric treatise of Michele Savonarola, and Dr. Neveu of Blosseville pointed out the similarity between the medico-social theories of Van der Mersch and of the philosopher Seneca. Dr. Sondervorst of Louvain discussed the death of the anatomist Spigelius and concluded that he died of a post-traumatic pyemia.

There were several interesting papers on the history of the medical schools of Montpellier and Salerno, topics of perennial interest. Dr. Dulieu of Montpellier described the beginnings of ethical instruction at Montpellier, and Dr. Turchini of Montpellier discussed the influence of Guy de Chauliac and his anatomical knowledge, gained largely at Bologna under Nicholas Bertrucchi. The influence of the School of Salerno on the development of medicine in Croatia was described clearly and brilliantly by Dr. Grmek of Zagreb, who pointed out that the Croatian navy fought as allies of Robert Guiscard and that the first medical book published in the Croatian language was the *Regimen sanitatis Salernitanum*. Dr. Wickersheimer, in two brilliant papers on the *Regimen Salernitanum*, stated that the King of England, to whom the poem was dedicated, has been often identified with Robert of Normandy, son of William the Conqueror, who was said to have been wounded at the siege of Jerusalem and to have been healed at Salerno. This story is a fable, originating in the seventeenth century. Arnald of Villanova, who was the supposed author of the well-known commentary on the poem, in reality had nothing to do with its composition. Apparently the commentary was written by a master of the University of Louvain.

Dr. Pezzi of Rome sketched the role of missionaries and navigators in the transmission of medical knowledge between the Orient and the Occident. Dr. Oliver of Saragossa pointed out the great service of the printers of Saragossa in the diffusion of medical knowledge during the fifteenth century, and Dr. Nardi of Florence described the activities of naturalists and physicians at the court of the Grand Duke of Tuscany in the seventeenth century, particularly their contributions to experimental medicine. Dr. Jonckheere of Brussels read a very interesting paper describing the role of an auxiliary physician or assistant to the physician in ancient Egypt. Dr. Jonckheere presents the unusual combination of an excellent medical historian and an accomplished Egyptologist.

Dr. Munster of Bologna described the role of Italian physicians in Hungary during the Renaissance; Dr. Nevzat of Ankara gave an account of the history of veterinary medicine in Turkey; and Dr. Yaver of Istanbul described the evolution of oto-rhino-laryngology in Turkey since the first World War. Dr. Ranoriamaro presented a paper on the evolution of modern medicine in Madagascar, and Dr. Andrade of Mexico City pointed out the numerous contributions of Mexico in the field of dermatology. Dr. Ibanez of New York gave a brief but comprehensive survey of the history of endocrinology, pointing out the initial stimulus given by Addison.

Dr. Lowenthal of Belgrade gave an interesting illustrated lecture on ancient Serbian medical practice, as illustrated by the murals in old Serbian churches and monasteries. Dr. Underwood of London showed in a series of illustrations some examples of pathological conditions represented in the art of primitive peoples, and Dr. Radbill of Philadelphia presented an interesting series of book-plates of physicians illustrating medical symbolism. Dr. Goldschmid of Lausanne read a paper on physiognomy.

The topics of medical education and medical economics brought forth some interesting papers. Dr. Sondervorst of Louvain discussed the teaching of medical history in Belgium, and Dr. Premuda of Ferrara performed a similar service for Italy. A number of papers scheduled for this phase of the program were not presented because of the absence of the authors. On the last day, Dr. Underwood of London presented a paper on the activities of the Wellcome Historical Medical Museum, illustrated by lantern slides and pictures. Dr. Pazzini of Rome and Dr. de Vasconcellos of Rio de Janeiro presented papers, but abstracts of these papers were not available.

On September 10, the official dinner was held at the restaurant Le Cabaret with Prof. Laignel-Lavastine as toastmaster. Numerous brief speeches were made, and the evening was one of good fellowship, restrained hilarity, and camaraderie. One of the high lights of the evening was the enthusiastic, even dramatic, talk (in Portuguese) of Prof. de Vasconcellos, who had flown from Brazil to attend the meeting and had arrived only that afternoon. At the dinner, a babel of English, French, Flemish, German, Italian, Portuguese, and Spanish was heard, and, although few congressistes were fluent in all these languages, the strong links of mutual interest and enthusiasm broke all language barriers.

On September 12, many members took part in the excursion to Cannes and on the following day to Monaco. On the afternoon of September 13, the congress was officially closed in the Conference Hall of the Oceanographic Museum of Monaco. Before adjournment, at a meeting of the official delegates, it was decided to hold the next meeting in Rome in 1954.

PUSHING BACK THE HISTORY OF OUR KNOWLEDGE OF RABIES

A number of authors, e. g. Harris in the 8th edition of Cecil's *Textbook of Medicine*, start their historical discussion of rabies with Aristotle, Celsus, and Galen. Whitmore, in Tice's *Practice of Medicine*, vol. 3, writes: "Akteon, son of Aristeus, died of rabies about thirteen centuries B. C. (Yount)." Whitmore, as well as Johnson in *Oxford Medicine*, vol. 5, chap. 26, notes that Democritus wrote of the disease. Johnson also notes that certain stone murals from the times of ancient Rome, Greece, and Egypt, depict mad dogs.

On p. 250 of vol. 1 of *The Interpreter's Bible* (Abingdon-Cokesbury Press, New York and Nashville, 1952), in the article on "The Old Testament World" by William F. Albright, Professor of Semitic Languages at Johns Hopkins University, I find the following. Referring to the famous Code of Hammurabi, Professor Albright writes:

"It was not the first code of laws promulgated in Babylonia; . . . in 1948 Albrecht Goetze discovered a law code in Akkadian from the city of Eshnunna, also dating about two centuries before Hammurabi."

Later, on the same page, quoting from this Eshnunna code, Dr. Albright writes:

"If a dog is mad and the authorities have informed its owner, but he does not cage it; if it then bites a man and causes his death, the owner of the dog shall pay two thirds of a mina [forty shekels] of silver."

This Eshnunna code is said by Dr. Albright to be about the same age as another code from the Nippur Library dated about 1885 B. C. so that it is the earliest mention of rabies that I know of.*

FREDERICK R. TAYLOR

IAN EARLE McCRACKEN

The London School of Hygiene and Tropical Medicine suffered a great loss on November 30th by the death of Dr. Ian Earle McCracken at the age of 51. Dr. McCracken, who was the son of a distinguished general practitioner in the north of England, graduated in Edinburgh University in 1924. He spent many years in general practice in Newcastle-upon-Tyne and achieved a high reputation as a clinician. In spite of recurrent attacks of illness and the heavy claims of family practice Dr. McCracken was able to devote time to the study of medical history; the aspect with which he was most closely associated was group practice, and he made careful investigations into a number of successful enterprises of this kind on the Scottish borders and in the London area.

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* For the entire Eshnunna code, Professor Albright kindly refers us to Goetze's translation in James B. Pritchard, *Ancient Near Eastern Texts Relating to the Old Testament*, Princeton, 1950, pp. 161-163; this law is found in section 56 on p. 163b. [Ed.]

Just before the second world war Dr. McCracken left general practice and took up appointments in the public health service, and was for a time Medical Officer of Health for Newcastle; but he was obliged on health grounds to resign at the end of the war. From that time until his death, Dr. McCracken was closely associated with the London School of Hygiene and Tropical Medicine where as a lecturer in public health he devoted himself to the study of medical history and to teaching the historical background of public health to postgraduate students. He was able to contribute a great deal to student life by his personal interest in their work and by organising historical studies for seminar groups. Some of these fascinating reports have already been published, but Dr. McCracken's personal researches moved more slowly because he constantly postponed his own work in favour of his duties towards the students. A number of his researches have already been issued. He had gathered together a large amount of further material for research, but unhappily it required his own critical evaluation for completion.

JAMES M. MACKINTOSH

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

TWENTY-SIXTH ANNUAL MEETING: COLUMBUS, OHIO, APRIL 10–12, 1953

HEADQUARTERS: FORT HAYES HOTEL

The meeting will be held in conjunction with the Sesqui-Centennial Celebrations in Ohio. For the tentative program see *Bulletin*, vol. 26, November-December, 1952, p. 603.

CONSTITUENT SOCIETIES

College of Physicians of Philadelphia, Section on Medical History

The Section on Medical History of the College of Physicians of Philadelphia will hold a meeting on Thursday, January 29, at 8:30 p. m., at the Hall of the College, 19 S. 22nd St., with the following program:

George M. Piersol and Igho H. Kornblueh: "The Vanishing Springs and Health Resorts of Pennsylvania"

Whitfield J. Bell, Jr.: "Medical Students and Their Examiners in 18th Century America."

The Kate Hurd Mead Class of 1888 Lecture in Medical History of the Woman's Medical College of Pennsylvania will be given on February 26, 1953, at the Hall of the College by Dr. Anderson Nettleship, Professor of Pathology at the University of Arkansas, who will speak on "A View of What Primitive Man Thought of Disease."

The Johns Hopkins Medical History Club

The Johns Hopkins Medical History Club held the following two meetings:

November 24, 1952

Victor A. McKusick: "The Minutes of the Johns Hopkins Medical History Club, 1890-1893: Reflections on the Role of the Organization"

Francis P. Chinard: "Claude Bernard's Red Notebook"

Edward F. Lewison: "The Operative History of Breast Cancer"

December 9, 1952

Jane Oppenheimer: "Some Relationships between Romantic Philosophy and Embryology"

Bentley Glass: "The Knowledge of Mendel's Work by His Contemporaries"

Josiah C. Trent Society of the History of Medicine

This society, dedicated to the furtherance of interest in the history of medicine, and composed of members of the Medical School and House-Staff of the Duke University Hospital, was founded in 1951. Its title derives from and seeks to

honor the memory of Dr. Josiah C. Trent, the noted historian and collector, who was a member of the Department of Surgery at the date of his untimely demise some years ago. Though young in years, the Society has been a most active one. It holds Constituent Society membership in the American Association of the History of Medicine. It has had the pleasure of several distinguished guest lecturers, including Dr. Loren C. MacKinney, Dr. Frederick R. Taylor, and Dr. Chauncey D. Leake. Dr. Richard H. Shryock delivered the first annual Trent Memorial Lecture, entitled "Changing Outlooks in American Medicine over Three Centuries" on November 18, 1952. The Society also sponsors an annual prize to be given to that member of the student body composing the best essay dealing with a subject of medical historical interest.

Regular meetings are held monthly and papers are presented by members of the Society. In addition, members of the Society are responsible for the teaching of a short course in medical history to the freshmen medical students at the Duke University School of Medicine. Most instrumental in the founding of this society was Dr. George J. D'Angelo, now a Fellow in the Department of Surgery at the Hospital, and formerly a member of the G. W. Corner Society of the University of Rochester School of Medicine and Dentistry. Dr. D'Angelo served as first president of the Society in 1951-52. Dr. Gerald P. Rodnan, now Medical Resident at the Hospital, is serving as president for 1952-53.

NATIONAL NEWS

History of Science Society

The History of Science Society held its annual meeting on December 27-28, 1952, in Washington, D. C. The Council met on the evening of December 27. The morning session, December 28, held jointly with the American Historical Association, was devoted to "New Views on Greek and Medieval Science." The afternoon session, which included papers by Marie Boas and George Foote, took place in the Armed Forces Medical Library where an exhibit had been provided honoring George Sarton. In the evening, a testimonial dinner was arranged in honor of George Sarton on the occasion of his retirement as Editor of *Isis*. Lynn White served as toastmaster and Dorothy Stimson, the newly elected president of the Society, opened the series of speeches paying tribute to George Sarton and his work.

American Academy of Dermatology and Syphilology

At the eleventh annual meeting a symposium on the history of dermatology under the direction of Samuel J. Zakon, dealing with French dermatology, was arranged for the morning of December 10, 1952. The program provided papers by Ilza Veith ("The Medical World of Jean Louis Alibert"), Stephen Rothman ("Jean Alibert and His Contribution to Dermatology"), James Herbert Mitchell ("The French Dermatologists I Have Known"), and Francesco Ronchese ("Historical Names of French Dermatology"). A round table discussion on the origin of some dermatologic terms concluded the program. An exhibit on outstanding French dermatologists had been arranged by Miss Elizabeth Carr and Miss Georgia Price.

American Association of the Advancement of Science

At the meeting of the AAAS, St. Louis, December 26-31, 1952, the Phi Beta Kappa lecture was delivered by Richard H. Shryock who spoke on "The Interplay of Social and Internal Factors in the History of Science, as Illustrated in Modern Medicine." Erwin H. Ackerknecht spoke on the role of medical history in medical education at a symposium held on December 28.

Armed Forces Medical Library

A new organization, Friends of the Armed Forces Medical Library, was formed on October 24, 1952, when a Constitution and By-Laws were adopted, and officers elected. The officers are: Henry R. Viets, Chairman; Robert M. Stecher, Secretary-Treasurer; and Edward H. Cushing, E. B. Krumbhaar, and Atherton Seidell, Members of the Executive Committee. For details *see* Armed Forces Medical Library, *News*, November 1952.

Chicago

The tenth D. J. Davis Lecture on Medical History at the University of Illinois College of Medicine, Chicago, will be given on May 6 by Dr. Richard H. Shryock, Director, Institute of the History of Medicine, The Johns Hopkins University. The title of his lecture is "Changing Concepts in American Medicine over Three Centuries." The lectureship was established in 1943 by the associates and friends of Dr. David J. Davis upon his retirement as Dean of the College of Medicine.

Madison, Wisconsin

With the beginning of the fall semester 1952 Dr. Glenn Sonnedecker becomes Assistant Professor of the History of Pharmacy at the University of Wisconsin School of Pharmacy, thus replacing Dr. George Urdang, the first occupant of the chair, who has become professor emeritus after reaching his seventieth year of age. Dr. Sonnedecker was the first to obtain a joint doctorate in the history of pharmacy and the history of science at the University of Wisconsin. His thesis dealt with "American Pharmaceutical Education Before 1900." He remains secretary of the American Institute of the History of Pharmacy, of which Dr. Urdang continues to be the director.

New York

An Institute on Medical History has been organized by The New York Academy of Medicine. This Institute is to be devoted to a study of the function of medical history in medical education and in other phases of contemporary medicine. The Institute will be held at Arden House, Harriman, New York, on March 13 and 14, 1953. It is expected that the transactions of the Institute will be published.

Philadelphia

During the week February 2-7, 1953, the Henry Phipps Institute of the University of Pennsylvania will celebrate its fiftieth anniversary. The Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis was founded in 1903 by the industrialist Mr. Henry Phipps of Pittsburgh, whose interest in tuberculosis was stimulated by Dr. Lawrence F. Flick of Philadelphia, a pioneer in the campaign against tuberculosis in this country, and one of the founders of the

National Tuberculosis Association. The Institute opened its doors for patients on February 2, 1903. It became a part of the University of Pennsylvania in 1909. On February 2, 1953, open house will be held at the Institute, in the building at 7th and Lombard Streets, Philadelphia, in which the Institute has been located for the past forty years. On Friday, February 6, formal exercises will be held at the University of Pennsylvania, with an afternoon medical session and an evening banquet, tendered by the University of Pennsylvania for friends of the Institute and distinguished guests. The chairman of the Fiftieth Anniversary Program, which has arranged the celebration, is Dr. Frank A. Craig, Associate Director of the Henry Phipps Institute and Professor Emeritus of Clinical Medicine, a member of the Institute's original staff. Dr. Norman Topping, Vice President in Charge of Medical Affairs of the University, will preside at the afternoon session. Dr. Esmond R. Long, Director of the Institute, will preside at the evening session. Mr. William H. DuBarry, Acting President of the University of Pennsylvania, and Mr. Robert T. McCracken, Chairman of the Board of Trustees, will address the guests of the evening on special phases of the Institute's work.

A series of three lectures at the University of Pennsylvania under the A. S. W. Rosenbach Fellowship in Bibliography will be given by Dr. George Sarton who will take as his subject "The Appreciation of Ancient and Medieval Science in the Renaissance." The lectures are to take place on January 16, 23 and 30, 1953. As in previous years, it is expected that the lectures will be published in book form by the University of Pennsylvania Press.

NEWS FROM ABROAD

Germany

The German Society for the History of Medicine, Science, and Technology held a joint meeting with the "Arbeitsgemeinschaft für Technikgeschichte im Verein Deutscher Ingenieure" in Schweinfurt, September 20 to 24, 1952. The large and varied program included speakers from Austria, Belgium, Sweden, and Switzerland. Dr. Ralph Major of Kansas City and Dr. Samuel X. Radbill of Philadelphia attended the meeting as guests.

Great Britain

The Heath Clark Lectures of the University of London for 1952 were delivered by Dr. Henry E. Sigerist. At the conclusion of the first lecture, the speaker was presented with a medallion in the possession of Miss Heath, the daughter of Charles Heath Clark who had received it from business magnates upon his retirement from the city.

The Scottish Society of the History of Medicine has issued its *Report of Proceedings*, 1951-52: "At the Third Annual General Meeting in October, 1951, the Society was honoured by having as its guest Professor Edvard Gotfredsen of the Chair of History of Medicine, Copenhagen University. He spoke on the reception of William Harvey's doctrine in Denmark, and illustrated his remarks with lantern slides. In February, 1952, at the thirteenth meeting, held in Glasgow, outstanding papers were delivered by Professor T. K. Monro and Dr. I. D.

Ferguson, while the summer meeting at Dundee in June was marked by a delightfully informal atmosphere to which Dr. H. J. C. Gibson and Dr. John Kinnear contributed papers dealing with the medical history of Dundee."

The Netherlands

On the occasion of the centenary of the birthday of Jacobus Henricus van 't Hoff, a memorial meeting was organized on August 3 by the Nederlandse Chemische Vereniging (Dutch Chemical Society) in Van 't Hoff's former laboratory at Amsterdam. Memorial lectures were held by Prof. H. J. C. Tendeloo, Prof. J. A. A. Ketelaar, and Prof. J. P. Wibaut. An exposition of documents, photographs, manuscripts, publications and scientific tributes was arranged by Dr. Maria Roseboom. The exhibition, in which many valuable souvenirs lent by the Van 't Hoff family were inserted, was shown afterwards in the Library of the Technical High School at Delft and the National Museum of the History of Science at Leiden.

Deaths

Dr. Arturo Castiglioni died in Milan, Italy, on January 21, 1953, at the age of 78. Dr. Castiglioni was an honorary member of the American Association of the History of Medicine and well known in this country where he had served as research associate in Yale from 1940 to 1947. On the occasion of his seventieth birthday, *Essays in the History of Medicine* were published in his honor as volume three of the Supplements to the Bulletin of the History of Medicine. The *Bulletin* intends to publish an obituary on Dr. Castiglioni in the near future.

BOOK REVIEWS

Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften. Herausgegeben von Paul Diepgen, Mainz; Edith Heischkel, Mainz; Hans Schimank, Hamburg; Johannes Steudel, Bonn; Rudolph Zaunick, Dresden. 36. Band, Heft 3, Juli 1952. Franz Steiner Verlag GMBH, Wiesbaden. Price of issue: D.M. 9 for subscribers (4 issues per year); D.M. 11 for others.

In 1908, the *Archiv für Geschichte der Medizin* was founded by Karl Sudhoff. On the occasion of his 75th birthday, the name was changed to *Sudhoffs Archiv für Geschichte der Medizin*, under which title it was edited by Henry E. Sigerist, Sudhoff's successor in the chair of medical history at the University of Leipzig. Beginning with volume 27(1934), and after Dr. Sigerist had left Leipzig, the history of science was incorporated and title and editorship adapted accordingly. Then came the war and after the appearence of number 1/2 of volume 36 in June, 1943, publication had to be suspended. It is now resumed where it stopped, with changes in publisher, place of publication, and composition of the editorial board. It is to be hoped that *Sudhoffs Archiv* will have a prosperous future and perpetuate the name of its founder, of whose birth the present year marks the hundredth anniversary.

OWSEI TEMKIN

EDV. GOTFREDSEN. *Medicinens Historie.* Kjøbenhavn: Nyt Nordisk Forlag Arnold Busck, 1950. 514 pp. Ill. Dan. kr. 46.50.

Professor Gotfredsen has undertaken to provide Danish medical students and doctors with a reference or handbook of medical history in their own language. It is based on the author's lectures to medical students at the University of Copenhagen, but the material has been thoroughly revised. Professor Gotfredsen explains in the preface that it has been his purpose to present as many facets as possible of the development of the various medical disciplines. Limitation of space has made it difficult to attain this objective, but the difficulty has been met by brevity of style, by omission of summarization and by some pruning of detail. The condensed material is, however, not presented in the form of an encyclopedia or dictionary; instead, great historical periods are used as the major divisions of the book, and each is appropriately subdivided into accounts of specific subjects.

The opening account concerns prehistoric medicine and describes archeological evidence of specific diseases, injuries and malformations. This is followed by an estimate of prehistoric therapy based on findings of healed fractures and trepanations as well as evidence of mutilations presumably performed as therapeutic sacrifices. The presentation of prehistoric medicine is then closed by a section entitled "Primitive Concept of Disease." In the absence of recorded thoughts of prehistoric men, the author describes how present day primitive people explain

disease and death from obscure causes in terms of gods, demons or animism. Medicine in the ancient civilizations is presented in separate short sections on Mesopotamia, Egypt, China, Japan, India, Tibet, Iran, The Jews, Mexico, and Peru. Later periods are discussed at considerably greater length. Greek and Roman medicine are dealt with in a number of subdivisions on various concepts, schools of thought, specialties, materials and methods. The following major divisions (Medieval Medicine, The Renaissance, 17th Century, 18th Century, First Half of 19th Century and Last Half of 19th Century & Beginning of 20th Century), are similarly subdivided, but the subject matter comes to consist increasingly of biographical accounts of the most important contributors to medical progress. Most of the 3 to 6 inch halftone illustrations and most space have, understandably, been devoted to the most prominent men. Something is also said of administrators, compilers of data, practitioners and teachers who have made particularly good use of knowledge already available. Pioneer workers who have paved the way for great discoveries are also mentioned. A number of cases are pointed out where the traditional credit for a discovery is probably misplaced, but, unfortunately, in spite of the vigorous and documented protests by J. S. Karling and E. G. Conklin (*Biological Symposia*, 1940), there is a repetition of the common error of giving Schleiden and Schwann (1838-39) credit for the cell theory without mention of its previous pronouncements by Oken (1805), Mirbel (1808), Lamark (1809), Dutrochet (1824), Turpin (1826) and Meyen (1828 & 1830). Data about persons considered less great or less interesting are given in catalog-like notes or in sentence formed lists, such as the reviewer employed in the preceding sentence. While these passages disturb the pace of reading and occur with considerable frequency in the last half of the book, it cannot be doubted that added data are made available to the reader, and deserved credit is given to some workers who would otherwise be neglected. Such style may therefore be considered acceptable in a publication which is avowedly a handbook or reference work. The organization of condensed biographical information into a series of sections on different subjects, rather than into a biographical dictionary, leads to the occasional reporting of different phases of one man's work in several different places. This proves awkward for biographical reference work. There are also some breaks in accounts of developments taking place over a span of time or geography greater than the divisions of the book, but, on the whole, the organization appears well adapted to the presentation of schools of thought, specific discoveries, ideas, materials, and methods. In addition it has the virtue of conveying a certain amount of continuity. One may estimate that the book is probably quite useful to the students for whom it was written, in spite of shortcomings in style and content.

The international balance of subject matter is generally good and would let the book be useful to medical students and general readers elsewhere. Publication in the Danish language is, however, likely to preclude this. In addition, there are a number of cases of emphasis, inclusion, omission and vagueness which are likely to annoy at least American trained biologists and doctors by appearing as a tendency to include insignificant data and not include concise information on subjects likely to be sought in a reference book. For example, the account of Robert Koch's contribution to medicine is specific about his birthplace and mentions

his father's occupation, but does not comment upon the scientifically monumental Koch's postulates and includes their substance only in fragmentary fashion, as incidental phrases, without enumeration, without reference to previous similar ideas by Henle, and without listing in the index. Similarly, it is recorded that Philip Syng Physick, the "father of American surgery," enjoyed a great reputation and was the first American to become a member of the French Académie de Médecine. He is duly credited with inventing the tonsillotome, but, except for a vague statement that he "improved several operative procedures," there is no hint that he did the pioneer work on practicable absorbable ligature material. In many cases the dates of establishment of various professorial chairs, amplified by the names of the first and sometimes subsequent occupants, are included when no noteworthy medical consequence is mentioned to justify the inclusion. At the same time, the revolutionary developments of sulfonamides and penicillin are each accorded only one sentence which lists dates and discoverers but says nothing of the nature of the improvements over previous therapy or the effect on medical practice either in general or with respect to any specific disease. In this case a possible explanation could be a desire to withhold judgement from recent events. This might be indicated by a number of omissions of recent developments not likely to be overlooked (e. g. radioactive tracers, atabrine, thiouracil, antihistamines and electroencephalography). Unfortunately, however, it is not made clear to what date the book's coverage is intended to extend, and it proved impossible to estimate it on the basis of included subject matter since some older matters, such as heparin and x-ray pelvimetry, are omitted while a 1948 faculty appointment is included.

It must be said that the biographical approach to history has been particularly well utilized by the author in several cases which portray the personalities of some of our medical ancestors and show that history sometimes is affected by very personal matters as well as by the character of the times. It is therefore likely that attention given to minor data on contributors to medical progress, at the occasional expense of concise interpretive presentation of their contributions and scientific ideas, may appear to American scientific readers to be merely the result of one author's overdependence on the biographical approach. The reviewer believes, however, that it is also a reflection of different emphasis by different educational traditions. In Denmark the accumulation and seriation of facts is regarded more highly than in the U. S., while in the U. S. more concern is shown for so-called "digestion" of facts by evaluation, elucidation of relationships and, where possible, the induction of general principles. If one keeps in mind this difference of preference, one may pay tribute to the painstaking labor that obviously went into the preparation of this work, one may compliment the freedom from typographical error and the good illustration, one may hope that the book will prove useful to the Danish readers for whom it was written, and at the same time one may, without being unkind, make the estimate that, aside from the language barrier, the book does not appear especially well suited as a reference book for American doctors and students of biology or medicine.

In summary, the book sticks to scientific subject matter and is somewhat analytical and interpretive in its first third or half, but gradually, as more names, dates, and personal data become available, they tend to be crowded into the ex-

planations of the development of scientific ideas or techniques. The details included are not uniformly pertinent and often displace the line of thought instead of being subordinated to it. Numerous data are accumulated which are, consequently, not easily assimilable, but which are made accessible by good indexing. The subject index covers 15 pages and the three column index of proper names fills 22 pages. In addition there are 8 pages listing text and reference books of general medical history and a 36 page bibliography of specialized literature. The last half or two-thirds of the book may be considered a generally well arranged and well indexed narrative catalog of men and events in medical history.

BENT G. BÖVING

HARVEY GRAHAM (I. HARVEY FLACK). *Eternal Eve*. The History of Gynecology and Obstetrics. Garden City, N. Y.: Doubleday & Co., 1951. xx + 699 pp. Ill. $10.00.

The author has a good background for writing a history of obstetrics and gynecology for he graduated M. B. and Ch. B. at Queens College, Manchester, and was house Surgeon at the Royal Infirmary where much obstetrical and gynecological history was made. He has written a similar book on surgery, and a biography of Lawson Tait and he is the editor of the new popular health magazine that the British Medical Association is putting out this year. Evidently, he has been working on *Eternal Eve* for years, for in 1947 he presented a paper on the pre-history of midwifery before the Royal Society of Medicine.

The story of *Eternal Eve* extends from neolithic times to the present. In his *Story of Surgery* our author advances the idea that since primitive savages today are on about the same level culturally as Neolithic man, " it follows that the surgery they practice today is probably analogous to that practised by our beetle-browed and shaggy-haired forebears half a million years ago. . . . Existing tribal practices may be regarded as a mirror of Neolithic surgery. The degree of distortion of such a mirror it is impossible to estimate, but it happens to be the only mirror we have." He uses a similar mirror for his pre-historical obstetrics and gynecology. This mirror is likely to have more blemishes and aberrations because of the innumerable taboos connected with the reproductive process. Even after the dawn of history the story is muddled, but our author handles it with restraint and discretion. The mythology, folklore, and interesting pictures that he has collected of this period should be especially interesting to an anthropologist. Some of the standard obstetrical stories do not stand up under his critical investigation. For instance, it is commonly believed that Eufame Macalyane and Agnes Sampson are the first martyrs to obstetric anesthesia, Euphame having sought relief for the pains of childbirth in 1591 which at that time was a heresy, the only cure of which was fire. Contemporary accounts, however, show that the witchcraft of these ladies consisted of the preparation of philters.

Obstetrics did not begin to develop until the Chamberlens invented their forceps and the midwives and the men-midwives began to struggle for recognition and patronage. This and subsequent developments are told in a delightful, gossipy

manner. We learn about Catherine de Medici's sterility and its cure, of Mary Queen of Scots' pseudocyesis, and of how much the preparations for Queen Anne's delivery cost the Crown. We learn that William Hunter's magnificent Atlas of the Gravid Uterus is not the only medical book published by the Baskerville Press, but that Baskerville printed a monograph on rabies for Dr. Joseph Dalby in 1762. Scattered about in the narrative are nice little biographical sketches of the midwives and men-midwives.

Chapter XIV on Puerperal Pestilence is a good example of the author's style. After stating that the disease was described by Hippocrates and named by Thomas Willis, he begins his discussion very properly with Dr. Charles White of Manchester and the beginning of the Royal Infirmary. After serving on the staff for 34 years White and 5 colleagues resigned on account of some disagreement, and he started the Lying-in Charity, which later became St. Mary's Hospital.

White's *A Treatise on the Management of Pregnancy and Lying-In Women and the Means of Curing, but more especially of Preventing the Principal Disorders to which they are Liable* (1772) contains the first attempts at the prophylaxis of puerperal fever. He advocated cleanliness, good ventilation, slow delivery, cutting the cord only after it had stopped pulsating, and placing the patient "In an upright position as early after delivery, and as frequently, as possible."

One of Charles White's patients was run over by a cart and sustained a fractured pelvis. Subsequently, she became pregnant and was operated upon by James Barlow, a former pupil of Dr. White. She was Jane Foster, the first woman in England to survive a Cesarean section. A year later John Hull, another of the Lying-In Charity group, operated on a case and saved the child but lost the mother. On September 23, 1798 he operated upon Ann Lee, who was seen by most of the staff members of both the Manchester Infirmary and the Lying-in Charity, and lost both mother and child, whereupon William Simmons, senior surgeon to the Infirmary, published a scathing pamphlet on the propriety of performing the Cesarean operation, to which John Hull replied. This was the beginning of the famous Cesarean section controversy that split medical Manchester from end to end. When the name calling became disgraceful even for the 18th century, Charles White, as an elder statesman, stepped in and stopped it.

Charles White and John Hull did a great deal to establish Cesarean section as a justifiable operation in cases of gross deformity of the pelvis. They were also associated in the study of milk leg. In 1801 Hull published a translation of Baudeloque's *Two Memoirs on the Caesarean Operation*, a copy of which fell into the hands of Dr. Jesse Bennett, who had performed the first operation in the U. S. This book contains in Dr. Bennett's handwriting the only record of the operation. After case no. 24 in the translation is written "25th 14 Jany. 1794 J. B. on E. B. Up 9 Feby. Walked 15 Feby. Cured on 1 March." After this digression of Charles White into the field of Cesarean section we are told of his influence on Professor Boër of Vienna, but even then we pay a visit to Alexander Gordon of Aberdeen and to Oliver Wendell Holmes in Boston before we are introduced to Semmelweis.

There are chapters on the Beginning of Gynecology, Anesthesia, Gynecology Made Safe, Midwifery Made Safer, X Rays and Radium, and finally the Twentieth

Century, all of which make delightful reading. A very complete index makes it an important reference book. To qualify as a book reviewer, I suppose I must point out an error. On page 400 Professor Hugh Lennox Hodge's last name is omitted, but I do not suppose that is a matter of great moment.

M. Pierce Rucker

Gilbert Horrax. *Neurosurgery: An Historical Sketch.* Springfield, Ill.: Charles C. Thomas, 1952. (American Lecture Series, Publication No. 117). xi + 135 pp. Ill. $3.75.

This is a short account of the development of the specialty of neurological surgery from the prehistoric era to modern times. In the introduction the author states that the book will follow the evolution of trephination, which he considers the oldest known major surgical procedure, through the ages. The first chapter considers the head surgery of the prehistoric and Egyptian eras. In this discussion is included the trephining of the Inca civilization, which is generally conceded to have occurred between 1000 and 1500 A. D. The older Peruvian surgery, that of Paracas, perhaps contemporary with the Hippocratic medicine, is not mentioned. The description of the Egyptian surgery follows Breasted's translation of the Edwin Smith Papyrus.

In the Greek period the meticulous account of the techniques of trephining given by Hippocrates, Galen, Celsus, Aretaeus, and Heliodorus speaks highly for the skill of the surgeons in those days.

In the medieval period, Horrax states, nothing was added to the surgery of skull fracture, but there is the suggestion that fractures and dislocations of the spine were treated surgically and that suture was advised for a divided nerve. In this period an abortive attempt at aseptic surgery was made by Hugh of Lucca and his followers. During the Renaissance trephining for skull fracture and surgical attacks upon spinal injuries gained favor. By the nineteenth century surgeons were boldly trephining most head injuries. But to this practice a reaction occurred, for skull operations in the septic conditions of the first part of that century had a high mortality.

The testing of the pre-Horsley period (1846-1890), Horrax considers to have yielded two outstanding first accomplishments in the surgery of the nervous system, one, the extirpation of a brain tumor diagnosed and localized by neurological methods, and the other the removal of an intradural spinal cord tumor. It was the era of such pioneers in the field of neurological surgery as Bergmann, Keen, and Macewen.

In the second half of the book, the era of neurosurgery dated from Victor Horsley, whom Horrax calls the father of neurological surgery, is outlined. The technical achievements of this age are accurately recorded and illustrated. The reviewer is somewhat disappointed that Horrax, who was so well acquainted with the American pioneers of neurosurgery, does not give more of the personalities which made up this era and developed the specialty.

The book is an easy reading account of the evolution of the surgery of the nervous system. The historian might like to have more references to original sources. For example on page 42 "according to Armour, Fabricius Hildanus (1560-1634) went somewhat farther than Paré in operative spinal procedures. . . . Elsberg says also that Fabricius Hildanus removed a sword blade from the lumbar vertebrae by means of an open operation." Verification from the original source would make such references more valuable and authoritative.

The monograph contains a selected list of 181 references, but no index.

The book, beautifully composed and bound, will be welcomed by medical historians, neurologists, neurosurgeons, and students of the nervous system who wish a brief historical sketch of the development of the specialty of neurological surgery.

A. Earl Walker

C. Raimer Smith. *The Physician Examines the Bible.* New York: Philosophical Library, 1950. vii + 394 pp. $4.25.

In this book, an attempt is made at compiling passages from the Bible which are of medical and naturalistic interest and to comment upon them in popular language from the modern medical and science point of view. Comments of this nature fill most of the book; for example, a popular account of the theory of evolution occupies almost 100 pages. The aim of the author is that of the popular expositor and not of the scholar or historian. There are no references to the works on Biblical and Talmudic medicine or natural history, only quotations from the Bible and some modern medical and science authors. There are, however, useful concordances of medical words and notions from the Bible and Apocrypha.

The comments given are sometimes surprising. For example: "Pharaoh's heart was hardened. Archeologists have found the heart, in the mummy of what is thought to be the pharaoh of the exodus, to be filled with calcified plaques as are often found in bodies of persons with arteriosclerosis. Nabal's heart also became as stone." (p. 16.)

Thirteen possible causes of backache are adduced in order to explain the verse: "the plowers plowed upon my back; they made long their furrows" (p. 22), and the causes of anosmia for the verse: "they have ears but they hear not; noses have they, but they smell not."

"God smote him (Uzzah) there for his error; and there he died by the ark of God." . . . "Uzzah apparently died by a stroke" (apoplexy—p. 46). Why? The reader would be interested in the evidence that this and other magic deaths were caused by cerebral haemorrhage (for example, that of Ananias and Saphira). It is obviously different in Alcimus' case (I Mac., 9, 55, as quoted on p. 117), who "was struck and his works were hindered and his mouth was stopped and he was taken with a palsy so that he could no more speak a word . . ." To Ezekiel's curse: Thou shalt prepare thy bread therewith (sc. cow's dung), the comment is: "Although excreta would not be good food, it can be used to prepare bacteriophage which is good medicine" (p. 105). Apart from the miracles, the only

passage in the Bible which, according to the author, disagrees with the latest scientific discoveries on medical subjects is: "You are smaller in stature than those who were before you and those who come after you will be smaller than you," (II. Es. 5, 54), because the average height of the men in World War II was higher than that of World War I (p. 131). He admits, however, that it may refer to a comparison with the giants of old or to a contemporary phenomenon. The author believes that Christ's miracles (including the resurrection) cannot be denied and that diseases healed by him were real organic diseases (p. 169). The authenticity of Christ's miracles is strengthened, the author says, by the internal evidence that Luke was a doctor (some of this evidence is compiled on pp. 180-184). The author is opposed to present day "faith healing" which might have but temporary effects or be due to delusion or deception.

In correlating the Bible and science (notably the theory of evolution), the author concludes "that God follows definite laws in His work and these are the laws of Nature, the laws that science is discovering and defining" (p. 287). For example: "let the earth bring forth grass" etc. stands for the "law of growth and heredity"; "but there went up a mist from the ground" etc. for the "law of vaporisation of water and its condensation to form rain" etc.

"And the Spirit of God moved upon the face of the waters"—this, according to the author indicates that "the Spirit of God (the great laws of energy and matter) was present and kept everything in perfect control upon the face of the waters (the reaction areas in space). Waters here refer to the ether or the electrical particles of space. If we could see the motions of these particles it would be as many waters" (p. 289).

It would be pointless to go into further detail. The book has its useful popular applications, for the medical parts in themselves are sound in substance and intelligible to the man in the street.

W. PAGEL

CARL ROEBUCK. *The Asklepieion and Lerna.* Volume XIV of *Corinth*, Results of Excavations Conducted by the American School of Classical Studies at Athens. Princeton, N. J.: The American School of Classical Studies at Athens, 1951. xi + 183 pp. Ill.

The Corinthian sanctuary of Asclepius and the adjacent resort of Lerna were discovered, and systematic excavation was started in 1929. F. J. de Waele of Nijmegen University, Holland, supervised the work and reported on its progress in the *American Journal of Archaeology*, 37, 1933, pp. 417 ff. and 39, 1935, pp. 352 ff.[1] On the basis of the incomplete evidence and of the then current theory concerning the age of the Asclepius cult he concluded that in the second half of the sixth century B. C. a small temple was dedicated to Asclepius and Hygieia at Corinth, that this earlier sanctuary endured for more than two centuries, and that

[1] Cf. also *Arch. Anz.*, 47, 1932, pp. 132 ff.; *ibid.*, 48, 1933, pp. 222 f.; *ibid.*, 50, 1935, pp. 642 ff.; *Gnomon*, 7, 1931, pp. 607 ff.; *R. E.*, Supplement, VI, *s. v. Korinthos* and *Lerna.*

about the middle of the fourth century B. C. a new temple was built which existed until its thorough destruction in the fourth century A. D.

De Waele was unable to finish the work before the outbreak of World War II, and it was not until 1946 that Carl Roebuck at the invitation of the American School of Classical Studies undertook the task of completing the publication. His book is based on whatever was left of de Waele's material, as well as on a restudy of the site and on some further excavations (Preface).

Few traces remain of the earliest structure, and there is no evidence of an Asclepius sanctuary in the sixth and early fifth centuries. The only identifiable object of which fragments were found in the earliest deposit was a krater inscribed with a dedication to Apollo (pp. 15 f.). This seems to signify that the original shrine was a temple of Apollo, while Asclepius in the beginning may have had no more than a statue in the cella, as he did at Epidaurus, Cos, and elsewhere (pp. 22 and 152).

Due to the political importance of Corinth as a port and to the growing influence of Asclepius, a monumental complex of buildings was erected in the late fourth century B. C., including a small temple, an altar with an offertory box in front of it, a walled precinct and an *abaton*; this sanctuary was closely connected with the resort of Lerna, a large square surrounded by colonnades and equipped with an enormous water supply. Both Asclepieion and Lerna flourished throughout the Hellenistic age, until they were destroyed with the rest of the city in 146 B. C.; the district was restored in the Augustan age, and Asclepius was worshipped at Corinth until the end of the fourth century A. D. (Chs. II-IV).

No literary references to the Corinthian Asclepieion have survived, except a brief mention by Pausanias (II, 4, 5). From the architectural remains alone, which are copious for some periods, but very meager for others, it would be difficult to draw any definite conclusions concerning the cult of Asclepius at Corinth; the inscriptions scarcely more than identify the temple district as belonging to Asclepius (p. 152). But there is one find that is unique and of singular significance for an understanding of the Asclepius cult: a large quantity of votive offerings, mostly life-size terracotta representations of members of the human body. Only a few such objects were found at Cos, Epidaurus, and Pergamum, because there, the votives were probably made of metal or marble and have perished because these materials could be reused. Terracotta objects, on the other hand, the products of a well established industry at Corinth, could only be buried in special deposits, once they were no longer desirable (Ch. V).[2]

The greater number of offerings found at Corinth are legs, feet, arms, hands, genitals, and female breasts; there are also several heads, ears, eyes, and various other parts of the human body. But it is noteworthy that hearts or inner organs are absent, objects which abounded among the Italian finds; and while eyes are the most frequent item in the inventory lists of the Athenian Asclepieion, there are only three such offerings at Corinth. This seems to indicate a certain "specialization" of the sanctuary, or at least to give an indication of the ailments from which the majority of the patients suffered (p. 114).

[2] The only comparable find was made on the Tiber Isle, but no adequate publication of these objects exists (p. 112).

All the votives were intended to be exhibited on the walls or to dangle from the ceiling of the sanctuary. Generally, they are of rather crude workmanship, typical products of large-scale manufacture, and it is hardly without meaning that, with one exception (Pl. 40, No. 63), no individual ailments or deformities are depicted: these are conventional votives signifying the ailment in a general way and probably offered as thanks after a cure in the same spirit that characterizes the inscriptions of the stelae at Epidaurus (p. 117).

Most of the objects are to be dated from the end of the fifth to the end of the fourth century B. C. The fact that no Protocorinthian or Early Corinthian ware was found is another indication that the sanctuary hardly antedated 600 B. C., and among the earliest finds nothing points to an association with Asclepius (p. 152). No direct evidence exists of the date of Asclepius' entry into the Corinthian sanctuary, but it seems reasonable to assume that his cult at Corinth was founded around the middle of the fifth century B. C. from Epidaurus, as was the cult in the neighboring town of Sicyon (p. 154). The Asclepieion at Corinth seems to have enjoyed no more than local popularity, but it played its part continuously for almost eight centuries (p. 159). Indeed it must have roused the particular anger of the Christians who, due to their passionate hatred of the pagan "Savior," destroyed his sanctuary completely, never erected a church in its place, and were careful even to put their graves outside of the temple area (p. 161). Thus the evidence of the Corinthian sanctuary, in the author's own opinion, leads to conclusions that fit in very well with the results of recent studies concerning the origin and the dissemination of the Asclepius cult (p. 154).

Mr. Roebuck's analysis of the archaeological material is admirably clear, concise, and detailed. His reconstruction of the temple district and of Lerna is sound and generally convincing, although in some instances the evidence is so scanty that the interpretation must necessarily remain conjectural (*e. g.* the appearance and purpose of the *abaton* building, pp. 42 ff., esp. p. 55). The book is well written and arranged. The votive offerings, miscellaneous objects, and architectural finds are minutely described, conveniently listed and amply illustrated; the architectural plans and the excellent plates give a clear picture of the site and its restoration.

This volume of the Corinth series is an important contribution to our knowledge not only of the Corinthian community, but also of the role of the god of medicine in one of the busiest ports and industrial centers of ancient Greece.

EMMA J. EDELSTEIN

ANNE TJOMSLAND. *The Saga of Hrafn Sveinbjarnarson.* The Life of an Icelandic Physician of the Thirteenth Century. Translated with an Introduction and Notes. *Islandica*, vol. XXXV. Ithaca, N. Y.: Cornell University Press, 1951. xxviii + 65 pp. $2.75.

This is the first monograph in the *Islandica* series, now edited by Kristján Karlsson, Curator of the Icelandic Collection, to be written by a Medical Doctor, the reason being, that it is a life of a thirteenth century Icelandic physician who, at that time, may have been the best M. D. of Scandinavia. One might have

expected that Dr. Tjomsland would use this translation of Hrafn's life as a springboard for a learned dissertation on her subject, and she does tell us that "books, pamphlets and manuscripts have accumulated down the years, calling attention to the great value of Old Icelandic Literature in the history of medicine." But she refrains from surveying them: "they are too numerous to mention."

This does not mean that she has neglected to write the introduction and annotate the saga from a medical point of view, as far as the subject warrants; but she keeps strictly within reasonable limits in this respect, letting the saga speak for itself. She also tries to do the saga justice from a cultural, historical, and literary point of view.

As W. P. Ker has remarked, the saga is one that keeps most successfully within the epic unities among the group of the contemporary histories collected in the *Sturlunga saga*. It means that it is unusually well told, and not as swamped with detail as are many of the other stories. But like most of the others, it contributes material towards the common theme of them all: the struggle between the church and the secular chieftains over the ownership of church estates. At first the church had sollicited the chieftains to build churches on their estates and to provide them with priests. By 1200 the church was demanding ownership, but did not get it until about a century later. The hero of our saga, being a cleric though not an ordained priest, was naturally on the side of the church; but unlike some of his fellow churchmen, he was very reluctant to fight, and this attitude did cause his death at the hands of a relentless enemy, a man to whom he had done more good than harm. This enemy of his is painted by the saga writer in such villainous terms that historians and critics have long suspected that the writer might not have been quite fair to him. As a result, and since Hrafn is sometimes described almost in the terms of a saint, the saga has a hagiographic tinge, not common in the sagas of its class.

Both ancestors (the great-grandfather) and descendants of Hrafn were known for skill in the art of healing. Hrafn himself studied theology, law, and medicine, and was a fine craftsman in wood and metal. He was also a good swimmer, archer, and swordsman and, like many Icelanders, he composed poetry. His piety took him on pilgrimages to the shrines of St. Thomas, Archbishop of Canterbury, St. Ægidius (St. Giles) at Ilansborg and (St. Gilles) in Provence, St. James de Compostella in Spain, and to Rome. Dr. Tjomsland believes that, while on his pilgrimage, he might have visited the medical centers of Salerno and Bologna in Italy, as well as Montpellier in France. To mention just one of Dr. Tjomsland's medical notes, she tells us that Hrafn's method of ligation in operating for bladder-stones, was described by Paulos Aegineta about the end of the seventh century A. D. and that description of it was found in one of the most widely read medical works in Hrafn's days. She does *not* comment on Hrafn's method of feeling for the stone in the bladder and pushing it into the penis, but a colleague of hers, Dr. Skúli Guðjónsson of the University of Copenhagen, seems to think that there is something fishy in that story.[1]

Supplementing Hrafn's saga, Dr. Tjomsland incorporates in her preface "an account of a serious injury and its treatment from the saga of Bishop Gudmund

[1] *Manneldi og heilsufar í fornöld*. Reykjavík, 1949. Pp. 54-56.

the Good, Hrafn's lifelong friend," and, as an appendix "a shorter and somewhat different account of the voyage which Hrafn . . . made with his friend Gudmund when the latter went abroad in 1202 to receive consecration from the Archbishop of Nidaros."

It remains to be said that this is the second saga of the *Sturlunga saga* collection to be published in *Islandica*, though in translation only. The first, *Þorgils saga ok Hafliða*, was published (in the original) by Halldór Hermannsson in 1945 (*Islandica* XXXI).

STEFÁN EINARSSON

S. ROODHOUSE GLOYNE. *John Hunter*. Baltimore: The Williams and Wilkins Company, 1950. x + 104 pp. Ill. $3.50.

Probably there is no other man in medicine who has had so much written of him as John Hunter. Hunter lived in the Golden Age of Johnson and is numbered well in the forefront of the giants of learning of that day. Besides the numerous biographies that have been written of him, more than ninety Hunterian Orations have been delivered in the Hall of the Royal College of Surgeons of England, and countless other works have appeared—addresses or essays—which extol this remarkable student of the biological sciences who accomplished so much in overthrowing medical thought of his day by advocating the study of the medical sciences through personal investigation for obtaining facts. Everard Home's *Life of the Author* (1794), appearing shortly after Hunter's death, contains much inaccurate information; Jesse Foot's scurrilous work, *The Life of John Hunter* (1794), merely vents the author's pent up feelings of frustration and jealousy; Joseph Adams' adds little to that which had been previously written in the two quite different editions of the *Memoirs of the Life . . . of John Hunter, Esq.* (1817 and 1818); Drewry Ottley's *Life* (1835) uncovers much information not generally known before, but the author still carries on the legendary tales of the earlier biographers; Samuel Gross's masterful address, *Hunter and His Pupils* (1881), sums up much that Hunter had accomplished to advance the science of surgery in Britain and America by training young men in carrying on his work and doctrines; George E. R. Mather's handsomely illustrated volume, *Two Great Scotsmen* (1893), and Stephen Paget's *John Hunter, Man of Science and Surgeon* (1897) introduced the great man to the lay public and made him known generally. It is, however, to George Peachey that we owe so much for exposing—after considerable serious study of the past—the many errors and legendary tales carried down from one biographer to another and for providing historical facts in their place. We have thus come a long way during the last century and a half in obtaining the truth concerning John Hunter and his life, but there is undoubtedly much more that has been hidden by time that might be unearthed.

We have now another biography of John Hunter—the one before the reviewer—contained in an attractive volume of about one hundred pages with handsomely printed text and suitable and pleasing illustrations, one of which is a fine colored reproduction of Reynolds' masterful portrait of Hunter. Dr. Gloyne has presented

this life story in a charming manner, which holds the interest of the reader at all times, giving a colorful picture of this unusual man's life and accomplishments. It is, however, unfortunate that he has failed in many instances to make use of the more recently corrected facts concerning Hunter's life and has continued the false legends of the earlier biographers. The subject matter is arranged in admirable form. For as the events of the story are unfolded in each chapter a background is provided for the chief actor. The first chapter is devoted to a brief description of Johnson's London, the metropolis and the people who lived there, both great and small. Then the author turns to Hunter as a child, in his Scottish home Long Calderwood, telling of his parents and the attempts made to educate him in the local school. We are then led to London, where the young man worked and studied under the guidance of his brother, William, who had already made a name for himself as teacher of anatomy and practitioner of midwifery. Here John Hunter spent ten happy years in the dissecting room, where he found a career for himself as a biologist and teacher. This chapter opens with a resumé of the anatomical knowledge of the day and a description of the anatomical schools of London and the customs of their teachers. Then John became an army surgeon, first at the siege of Belle Isle and later in Portugal, during the closing years of the Seven Years' War. Hunter's life at Earl's Court is pictured in detail, that strange country place—summer home, farm, menagerie, laboratory, and museum—which he used for retirement when seeking rest and relaxation from his occupation in the city by, it is said, intense study of the propagation, lives and habits of animals, birds, insects and vegetative forms of life. His observations on embryology, animal heat and the lives of bees were made at Earl's Court. Here he brought his bride, Anne Home, who became a most patient and understanding wife to this temperamental genius; although it should be said she was a woman of some importance in her own right. Continuing, we hear of Hunter as a teacher of the principles of surgery—a subject that had hardly been touched upon by anyone before—and as a surgical practitioner, his treatment for aneurism being his best known endeavor in this field. We are told of his devoted pupils and followers who furthered his views on life and carried on his teachings, often against strong opposition, thereby establishing his methods for learning through observation and scientific research. The best known of these disciples was Edward Jenner to whom the author of this work gives an entire chapter in relation to the research he carried on with Hunter. Hunter's accomplishments as an author are mentioned: the communications made before the Royal Society and later published in its *Philosophical Transactions*, and the books that came from his pen, works of importance because of their originality but difficult to read owing to the obscurity of his style. Dr. Gloyne finally tells of Hunter's tragic death, precipitated by emotional strain, brought about by having his desires thwarted at a meeting of the surgical staff of St. George's Hospital during a discussion of plans for the instruction of surgical pupils.

This biography of John Hunter is complete and is simply written, so that any reader can enjoy it and gain knowledge without turning to a medical dictionary

for assistance. There is a short but well chosen bibliography to be found at the end of the volume. Unfortunately a list of references for the text is not included; this is particularly regrettable since there are a number of statements that seem to be controversial in nature. The work, nevertheless, may be recommended as one that will find a place beside the other well known lives of this famous man.

FENWICK BEEKMAN

GULIELMA FELL ALSOP. *History of the Woman's Medical College, Philadelphia, Pennsylvania, 1850-1950.* Philadelphia: J. B. Lippincott Company, 1950. xii + 256 pp. Ill. $4.00.

This is the story by an alumna of her Alma Mater's struggles and progress over the century of its existence to prove that women are entitled to a place in the world of medicine. With two notable exceptions up through the first half of the nineteenth century, women were completely excluded from the opportunity to engage in formal medical studies. The exceptions were the redoubtable Elizabeth Blackwell, who was graduated from Geneva Medical College in 1849, and Sarah Read Adamson Dolley, who secured her degree at the Medical School in Rochester in 1851. Even after Dr. Blackwell's demonstration of her ability by leading her class and winning the liking and respect of faculty and students, the door was firmly closed to the admission of further women students.

Hence, it is not surprising to learn in Dr. Alsop's interesting and well documented account that over the second half of the nineteenth century a number of medical schools and teaching hospitals were organized in various parts of the country to provide the basic and clinical educational opportunities for women denied them in most of the existing colleges and universities of that period. In this movement the "Woman's Medical College" (organized in 1850 as the Female Medical College of Pennsylvania) played a leading role. Its strength and stability is attested by its being the sole survivor of the movement at the mid-point of the 20th century.

The beginning of the campaign to overcome discrimination against women in medicine coincided with the inception of the women's rights movement and the exciting days of anti-slavery agitation which culminated in the cataclysm of the Civil War. During the present days of meteoric swiftness of change, we tend to forget that the middle of the 19th century was a time of almost equally portentous revolutionary movement. As the author points out, at that time, "The pioneer days were still close in everyone's memory. The persecution of the Puritans, the burning of the witches at Salem, the persecution of the Quakers in England that sent them to Pennsylvania—all were almost family events. Times were changing however especially for women."

The invention of the sewing machine symbolized the beginning of the liberation of women from household drudgery, when "mother's work was never done" and that emancipation turned the thoughts of talented women to professional careers previously barred to them.

Dr. Alsop's book is really a series of biographical sketches of the deans of the College, beginning with the founder, Dr. Ann Preston, a frail Quaker lady of vast courage, vision, and determination. She was followed by Dr. Rachel Bodley, "one animated by the power of science and a great zeal for work of the woman medical missionary." She carried forward the tradition of Christian idealism initiated by Dean Preston and inspired many graduates to give their lives to the relief of suffering in fields of missionary service.

Third in line was Dr. Clara Marshall whose career as student, professor, and dean began as a member of Ann Preston's last class. She became a leader in the field of materia medica. Indicative of gains being made in recognition of women's place in medicine, she was invited to lecture to large classes of men students at Old Blockley as early as 1882. During her tenure, the medical course was lengthened to four years (in 1893) and more basic science was introduced, the stimulus having been given by the discovery of the role of bacteria in infections. The great need of the College was a teaching hospital under its own control, and Dean Marshall had the great satisfaction of laying the cornerstone of the College Hospital in 1907.

The period of 1917 to the present was covered by the deanships of Martha Tracy, a great leader of public health movements under whose inspiration the present College buildings were built in 1930; Margaret Craighill, a specialist in obstetrics and gynecology who was distinguished as the first woman physician to be commissioned an officer in the Medical Corps of the United States Army; and Marian Fay, first dean in the second hundred years of the College history and the one who is still in office. It is of great interest that Dr. Craighill's resignation was the result of the failure of an attempt by her to terminate the College's century of medical education exclusively for women, by a proposal to merge with Jefferson Medical College. But the final step to make medical coeducation universal in the United States was not to be, and the Woman's Medical College of Pennsylvania continues to carry on as the symbol of the right of "A woman of determination, ability and courteous demeanor"—"to go as far as her talents and training can take her." In this historic mission, the College's continuing success will depend upon securing adequate financial support. Dr. Alsop's book should aid in awakening public response to her Alma Mater's need.

JEAN A. CURRAN

ALFRED E. COHN and CLAIRE LINGG. *The Burden of Diseases in the United States.* New York: Oxford University Press, 1950. viii + 129 pp. Ill. $10.00.

The approach to new knowledge in medicine is threefold. Clinical bedside observation of the sick individual is the primary point of departure. Modern laboratory experiment is the most productive source. The third procedure is epidemiological, where the unit of study is a whole population including both the sick and the well, and observation is of disease under natural rather than controlled conditions. Each general method of study has its individual uses; they commonly supplement each other; and no one suffices to give the total answer to the nature of disease processes.

After a distinguished career in caring for the sick, and still more in exploring by experimental means the diseases of the heart and circulatory system, it is not surprising that the senior author should turn his attention to the community or crowd approach to disease. A life time of experience in a specific line of investigation, while tending to exhaust the freshness of conceptual idea, does bring appreciation of the potentialities of other means for study and permits a broadened view of problems. In this analysis of the burden of disease, considered as a mass phenomenon within the selected universe provided by the United States, the need for statistical method is met through the collaboration of the junior author.

The book has as its purpose to present the changes that have taken place during the past half century in the frequency distributions of mass disease. The evidence is drawn from vital statistics. While the principal concern is with the United States, mass disease in that area is adequately related to the world situation. The present is evaluated and the future estimated, with the objective of a better direction of public health activities.

The crude death rate in the United States has declined progressively in the years since 1900, in part because of the lesser frequency of certain diseases, and partly because of changes in the makeup of the American population. The main events include a notable increase in diseases associated with normal aging, and a well-marked decrease in those of accidental origin, which is variously nutritional, or physical (trauma) or hygienic (infections). Specifically, the rates for deaths from infectious diseases have declined in youth, and numbers of deaths in youth and also in the older decades. Again, the number of deaths has increased remarkably in the much augmented population of older persons, primarily from maladies of the circulatory organs, of the heart and blood vessels, especially those of the cranial cavity and the kidneys. Finally, relatively few deaths now occur in middle life.

A community counts its deaths with much exactness and records their nature with fair reliability, much better than the cases of illness and injury that occur. Consequently, the interpretation of mass behavior of disease rests mainly on mortality. Separate chapters of the book deal with the leading causes of death at different times, and with the influence of age, of sex, and of race on the disease as a whole and on the various disease classes. Much attention is devoted to the course of events in specified ailments, such as those of the circulatory organs, tuberculosis, diabetes, and cancer. A noteworthy feature is the recognition that traumatic accidental injuries are the first cause of death in childhood and among young adults, that the numbers of deaths are excessively great among the aged, and that for all ages accidents are the fourth cause of death in the United States.

No view of the burden of disease is complete without attention to morbidity as well as mortality. Records of morbidity are notably incomplete because, other than for selected diseases among the infections and a few others, report by physicians to governmental agencies is not required. Even for the limited number of diseases that are reported, practice is unsatisfactory, sometimes representing no more than 5 per cent of cases that occur. The inexactness introduced by the existing stage of medical knowledge and the inadequacies of medical diagnosis discount the value of the basic data. Information of greatest use is therefore to be had from field health surveys, where the frequency of disease in communities is determined through

actual visits to households and a census of immediately preceding disabilities. with the data sometimes acquired by a single visit and sometimes by repeated visits over a specified time. The tabulated summary of kinds of information available from the five principal sources that exist is not surpassed anywhere. Limitations of individual studies are defined. The millenium of completely reported disease is recognized as impractical. Within practical range are more frequent surveys to measure changing conditions; probably not the bigger or more extensive surveys the authors advocate, but rather more numerous intensive surveys providing detailed information which, from the standpoint of cost and efficiency, take advantage of the sampling technics provided by modern field method.

The attitude expressed towards statistical data and statistical method is refreshing. Statisticians commonly delight in introducing multiple inhibitions and reservations, and physicians tend to discount the value of statistical inferences because of limitations within the basic data with which they are unfamiliar. Statistics is both an applied and an independent discipline. The ultimate test of biostatistics in the study of disease for purposes of the community is pragmatic. The inexactness of basic data, that data are imperfectly or incompletely collected, does not justify a defeatist attitude. The statistician may assert with right that no satisfactory method exists for intercensal estimates of a population, and yet each January health officers require such estimates to judge accomplishment, to plan for the year ahead, and particularly to justify appropriations for health work. Allowance is necessary for known deficiencies. Their recognition is often a step toward improved conditions. Data are to be used to the limit they permit. In a rough world it is often necessary to get on with rough methods.

The presentation of material on the burden of disease is in two parts. The first is a well printed, large format, double columned volume with documented text and a preference for charts and graphs rather than tables as a means to illustrate statistical data. The liking for graphic presentation is further evidenced in the second part of the work which is a color-chart slipcase of similar form to the printed volume, containing five large folded charts in multiple color. They would seem too complicated for the comfort of clinical readers and they lack the detail the epidemiologist desires in order to extend and confirm the analyses made. The tables upon which charts are based are stated to have been deposited in representative libraries, but there is question if the tables would not have been a more valuable and no more expensive appendix. The charts are strikingly reproduced, but the beauty that lies in well ordered columns of figures is also to be appreciated. The text itself is sometimes heavy going by reason of the effort to spell out the many statistical ramifications. The authors give the impression at times of having accepted a statistical interpretation as a necessary evil, but with no love of the game; for instance in the remarks on " arid tables " and refusal to accept a differentiation of incidence and prevalence as fundamental to an understanding of the movements of disease in population groups.

A classification of diseases as major, minor, and trivial depends upon viewpoint. The common cold is clinically a trivial disease but judged from the days of disability experienced by a population it is anything but that. Such difficulties are unavoidable when disease is interpreted on human or physical values and socio-economic factors are outside the scope of study, here clearly so stated. To substi-

tute "minor illness" as an end result of disease or injury, in place of crippling or permanent defect, results in no practical nor useful gain. Death, defect, and disability are a tested triad by which community disease has long been judged.

The student of mass disease finds difficulty in accepting infectious disease as "now so close to disappearance," despite the progress of recent years. The acute exanthemata are not the only diseases essentially limited to childhood, for whooping cough is that, and more than any disease with a rash. That "the introduction in 1900 of a vaccine against typhoid fever accelerated a decline in deaths already in progress" clearly does not hold for civilian populations. The vaccine has never been used enough to make much of an impress on either mortality or morbidity. Even in military practice, immunization scarcely ranks with environmental sanitation as the responsible limiting factor.

The authors are at their best in clinical relationships. The discussion on senility and the end results of the aging process, and the extent to which ailments formerly described as renal or cerebral are now included among cardiac deaths because of changing practices in diagnosis, is enlightening. A general term expressing the breakdown in the circulatory system incident to advanced age would have the advantage of separating cardio-renal-vascular deaths of advanced age from real heart disease, thus clarifying the composite that is now represented in official tabulations by deaths from disease of the heart.

The merit of this work is in its contribution to the concept of public health as an integrated field in medicine. Better treatises are to be had on population pressures and on the epidemiological principles that determine the movements of mass disease. The book talks to the practicing physician in terms of clinical medicine; and that has value, for the individual practitioner carries much of the responsibility for this newer public health. Many thoughtful suggestions toward a better understanding of mass disease are introduced from the experience of a trained and analytical investigator in clinical medicine.

Profound changes have taken place in the composition of the leading causes of death. They have brought the need for changes in the treatment of the sick, in the ailments that require study, and in the community provision of hospitals and medical service. The degenerative and neoplastic diseases have taken on new significance, and chronic disease becomes a problem of the public health along with the acute infections which were so long the main consideration.

The new enthusiasm for geriatrics should not lead to neglect of the health of children, which is still the chief concern of organizations for community health, now admittedly not because of acute infections but because of matters of nutrition, growth, and development. The years of the child are many and productive; those of older people few, and commonly unproductive.

Among new problems posed by the proportionately greater numbers of older people in the population is the need for practical means to distinguish chronological from physiological age, that greater use may be made of the richness of experience and the maturity of wisdom resident in that group. The principle of prevention in chronic disease would seem to be that so long practiced in measles. Neither death nor measles can be avoided. The aim is to postpone measles to a time of life when the disease is of little moment; and with chronic disease to defer the incapacities of middle age to a more appropriate time.

JOHN E. GORDON

SHERRINGTON, SIR CHARLES. *Man on His Nature*. The Gifford Lectures, Edinburgh, 1937-8. Second Edition. Cambridge University Press, 1951. 300 pp. Ill. $6.00.

This is the second edition of a classic which needs no introduction to a medico-historical forum. For in it, the historical approach provides a platform for the unfolding of a modern biologist's philosophy. It is not intended to deal with the latter in the present review.

Sherrington finds in Jean Fernel a congenial spirit, whose adherence to contemporary trends such as astrology and magic is tempered by scepticism and criticism; he thus appears a suitable background against whom to contrast and define modern biology generally and the author's views on life in particular. This choice of a hero is eminently personal and therefore legitimate. It appears to have set a fashion and led, on the part of Sherrington's admirers, to somewhat wild statements, such as that Fernel's Dialogues on Occult Virtues mark the "beginning of modern physiology and pathology." Indeed, in the words of a recent commentator, it made Fernel a figure "dont la renommée croissante dans les milieux scientifiques anglo-saxons reste un mystère."

Fernel was certainly a level-headed and critical scholar, as is best seen in his clear and logical way of expression and nomenclature. It is often read that he coined the terms "Physiology" and "Pathology." But this is not quite correct, in that there are at least two loci in Galen in which the "physiological and pathological parts of medicine" occur ("Μέρη ἰατρικῆς τὰ μὲν πρῶτά ἐστι, τό τε φυσιολογικὸν καὶ τὸ αἰτιολογικὸν, ἢ παθολογικόν. . . ." Introductio s. Medicus, cap. 7. Ed. Kühn, vol. XIV, p. 689, and Definitiones Medicae XI, *ibid.* vol. XIX, no. 10, p. 351; no. 464, p. 458).

The reviewer would agree, however, that the *modern* use of these terms probably originates with Fernel. Skilful terms introduced by Fernel include, for example, "caseation" (used again by Van Helmont. See the reviewer in Beitr. z. Klinik d. Tuberk., 1928, LXIX, 318) and "unlocking of a pulmonary vein" to denote haemoptysis due to congestion and suppressed menstruation (see the reviewer in Victor Robinson *Memorial volume*, New York 1948, p. 306). He had some advanced anatomical knowledge, for example, of the communication of the testicular space with the peritoneum and also of the bronchial arteries (see to this: Morgagni, *Advers. Anat.*, Patavii 1719, I, 31 and V, 45 and 46). In pathology, Fernel seems to have aimed at some emancipation from the domination of the humoral concept. For he regarded the solid parts as the actual "seats" of diseases and the humours as their causes. He also enlarged on the concept of "disease of the whole substance" (Morbus totius substantiae), which would not lend itself to explanation in terms of elementary and humoral mixture. All this, however, concerns the shadowy outlines of a theory, in which scholastic reasoning is blended with defence of astrology and magic remedies. In substance, as in his whole outlook, he depends upon Galen, whose text he wants to liberate from Arabic misinterpretation.

Sherrington's search is deep and critical. He demonstrates, for example, the differences between Fernel and Aristotle, differences which lend themselves only to deep and expert historical analysis. Fernel was a strict dualist. Unlike Aristotle,

he could not regard matter and form as but the different aspects of the same entity. "Matter," in Fernel's opinion, had no potentiality which could aspire to the realisation and perfection of "form." "With Aristotle the causation was immanent. With Fernel it was extrinsic" (p. 35). "There was, for Fernel, a power outside the Universe which adapted means to its ends" (*ibid.*). "With Aristotle we are left sometimes in doubt whether the mind is, or is not, something pertaining to matter. With Fernel we are never for a moment in doubt. The mind is incorporeal, its substance is non-material" (p. 36). Fernel thus had less difficulty than Aristotle in imagining the living body to be replenished and formed "from material which was not living before incorporated and then on incorporation became alive. It offered no difficulty where an immaterial life principle tenanting the body vivified it all" (p. 85). In all this biological thinking, Fernel seems to be far behind the advanced biological insight of Aristotle. On the other hand, one century before Descartes, he seems to have foreshadowed reflex-action, whereas Aristotle thought of "motor acts as in every instance an appanage of mind" (p. 151). Descartes' idea that the motor act required an inhibitory process along with an excitatory, was as original as it was speculative. It was scientifically confirmed only 250 years later. It was a fruit of his vision of the body as a machine—an idea that would not have been comprehensible to Fernel.

The latter part of the book is devoted to the limitations of the Cartesian view—as chiefly seen in those actions of mind which are "not initiated through any gateway of sense" (p. 182). Fernel had subscribed to the belief that the rational soul enters the embryo in the fourth month. "Who shall discover it in the little mulberry-mass which for each of us is our all a little later than the one-cell stage; or even in Fernel's 40-day embryo? Yet who shall deny it in the child which, in a few months' time, that embryo becomes? Here again mind seems to emerge from no mind" (p. 210).

No justice can be done to the panorama of life which the author unfolds, from the primitive energy system of the cell to the autonomy and uniqueness of mind and thence to the realms of Ethics.

Sherrington is a master of inspired diction, and it is for this that the present book is so memorable. It is the way that the eternal problems of life are posed and the integration of modern with ancient thought which secures it a wide appeal to the Historian, the Scientist and, indeed, to the intellectual reader at large.

WALTER PAGEL

WOLF VON SIEBENTHAL. *Krankheit als Folge der Sünde.* Hannover: Schmorl & von Seefelt Nachf., 1950. 99 pp. D.M. 4.00. (Heilkunde und Geisteswelt, ed. Johannes Steudel, Band 2).

"Disease as a consequence of sin" is a medical theme of utmost importance if for no other reason than the fact that millions of persons believe in the existence of such a relationship. The author tries to analyze the forms in which the belief manifested itself historically and to sum up briefly his results as to their bearing upon present day medicine.

The five stages discussed are: primitives, ancient India, Mesopotamia, the Hebrews, and the Christian Western civilization, the latter being subdivided into

(a) Jesus of Nazareth, (b) patristic and medieval period, (c) Paracelsus, (d) Romanticism, (e) development until the present.

The author explains the general readiness to view disease as a consequence of sin as grounded in the belief of man's dependence on a higher order. If man breaks this order (by transgressing a tabu, rebelling against God's law or the doctrines of the Church), he commits a sin and the resulting disharmony may appear as disease, i. e. a somatic disorder. This broad view seems very fruitful; it helps the author to a better understanding of the belief in the "impurity" of the sick. From the point of view of the religious cult everybody is "unclean" whose relationship to the deity has been disturbed, disease being but one possible form of disturbance. Religious laws which regulate the "impurity" of sick persons have, therefore, primarily a cult character, even if "hygienic" experiences may have entered into the regulations. Very instructive too is the section on romanticism, especially the discussion of the doctrines of Windischmann and Ringseis. Because the author is inclined to believe in the possibility of disease being caused by sin, he succeeds in presenting the ideas of these men more closely and objectively than is usually the case.

On the other hand, the little book has some serious faults. On the present level of anthropology it seems to me no longer admissable to take the conglomerate of modern primitives as a clue to some hypothetical "Urmenschen." Again, the chapter on Mesopotamia is much too short (one and one-half pages!). Here we know more about the development of the concepts with which the book deals. The author over-emphasizes the role of disease as an entry to "true religious experience." One may readily grant that suffering makes many persons accessible to religious thought, and disease certainly is a great source of suffering. But it is only *one* source and it would be interesting to analyze its role as compared with that of other evils from which men suffer. Moreover, if the author points out the many medical analogies in the language of religion, it can be said that this is equally true for ancient philosophy as Edelstein has recently shown (*Bull. Hist. Med.*, 1952, *26*: 299-316).

In spite of these shortcomings, the historical part of the book is interesting and certainly stimulating. Unfortunately its impression upon this reader, at least, was not enhanced by the final summary. The author makes a plea for the necessity of interpreting the whole existence of the patient when one wishes to heal him, and to admit sin as a possible factor. I think that just those willing to listen to the plea would like to have it presented as clearly as possible and will be disappointed by their somewhat facile dismissal with a few existentialist phrases.

OWSEI TEMKIN

THE BULLETIN RECENTLY RECEIVED *

Maimonides. *Über die Lebensdauer.* Ein unediertes Responsum herausgegeben, übersetzt und erklärt von Gotthold Weil. Basel-New York: S. Karger, 1953. 59 pp. Swiss francs 8.30.

Charles D. O'Malley and J. B. de C. M. Saunders. *Leonardo da Vinci on the Human Body.* New York: Henry Schuman, 1952. 506 pp. 215 plates. $25.

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section.

James Stirling Ross. *The National Health Service in Great Britain.* An Historical and Descriptive Study. New York: Oxford University Press, 1952. 398 pp. $7.

Wellcome Historical Medical Museum. *Catalogue of an Exhibition Illustrating the Medicine of the Aboriginal Peoples in the British Commonwealth.* With an Introduction by E. Ashworth Underwood. New York: Oxford University Press. 58 pp. $.85.

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